LATE MOGOLLON COMMUNITIES

Four Sites of the Tularosa Phase Western New Mexico

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FIELDIANA: ANTHROPOLOGY
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Preface

During the summer of 1954 we excavated portions of three sites: (1) The Great Kivas at Higgins Flat, a smaller, nearby depression (a pithouse kiva), and a bit of a small pueblo, partly demolished in prehistoric times, near the Great Kivas; (2) part of a pueblo (now obliterated by a new highway) that was located a few hundred yards south and west of Apache Creek store and postoffice; and (3) two rooms of a pueblo (Valley View) several miles east of Apache Creek.

The Great Kivas and the nearby pueblo and pithouse kiva are on a bluff overlooking the San Francisco River and are on the ranch of Mr. Ray Hudson of Reserve, New Mexico. We are greatly indebted to Mr. Hudson for his courtesy in permitting us to excavate on his property.

The Apache Creek and Valley View sites lay on land belonging to the United States Apache National Forest. Our excavations there were conducted under a permit issued to Chicago Natural History Museum by the Forest Service, United States Department of Agriculture. We are grateful to Mr. John C. Baird, Forest Supervisor of the Apache National Forest, and to Mr. Robert Carey, Ranger of the Hood Ranger Station (near Reserve, New Mexico), for their interest in our work and for their recommendation that our permit should be continued.

Our assistants were Mr. and Mrs. James T. Barter; Messrs. W. T. Egan, George Dunham, Jack Hardy, Eugene Klotz, John Menges, William Menges, Byron Spurgeon and Dudley Thomas; and Mrs. Martha Perry, our cook. Mr. Alan Olson conducted an archaeological reconnaissance for one month in Arizona. We are grateful to all these persons for their hard work, co-operation, and cheerfulness.

Support of our researches has been most generously granted by President Stanley Field, Dr. Clifford C. Gregg, Director, and our Board of Trustees. I doubt whether any archaeological endeavor has had warmer encouragement.

We are also indebted to Mrs. Mary Crackel, Mr. C. E. Gurley, Mr. Roy Henry, Dr. Charles W. Keney, Dr. Lester Keys, Mr. E. O. Kiehne, Mr. Horace Spurgeon, and Mr. Oral Tinney. Mr. Philip Young traced the maps, plans, and sections and made the charts.

May 25, 1955

PAUL S. MARTIN

Contents

List of Illustrations

Text Figures

List of Tables

I. Description of Architectural Details

By Paul S. Martin

GREAT KIVAS, HIGGINS FLAT

The digging of the Great Kivas, located a few yards south of Higgins Flat Pueblo (excavated in 1953; Martin, Rinaldo, *et al.*, 1956), occupied the first six weeks of the 1954 season. It was a larger undertaking than we had expected, but it was worth doing and provided us with valuable information on this particular type of structure. So far as we know, only one other kiva like this has been excavated (Sawmill Site, Pine Lawn Valley; Bluhm, 1957). There are perhaps from two to four more such structures in this general area. The feature that sets this type of kiva off from other rectangular, subterranean buildings is the ramp or inclined plane entryway.

When we started digging the Higgins Flat kiva we assumed that we were about to excavate one building. After digging had been under way for several days, we were surprised to find a ledge or an offset at the base of the walls. We assumed that this was a bench. Both of these assumptions proved to be wrong. The "ledge" or "bench" proved to be the lower walls of an earlier kiva that also had been provided with a ramp entryway. Thus, we were in substance digging two kivas, one earlier and one later.

The axis of the earlier kiva was not the same as that of the later one; and, as can be seen from the photographs and maps (figs. 1–5), the walls of the earlier building run under the later walls. The floor of the first kiva apparently served also as the floor of the second one.

In the data that follow, I shall present descriptions, where pertinent, for both structures and shall denote them as "earlier" or "later."

Shapes: Earlier: roughly "D"-shape in outline. Later: rectangular.

Dimensions: Earlier: 10.5 meters north to south and 9.5 meters east to west. Later: 12 meters north to south and 10.7 meters east to west. For dimensions of ramp see below.

Walls: Earlier: of masonry (fig. 6). Stones are unworked, small river-cobbles laid as a veneer against excavated dirt walls; all fairly small and

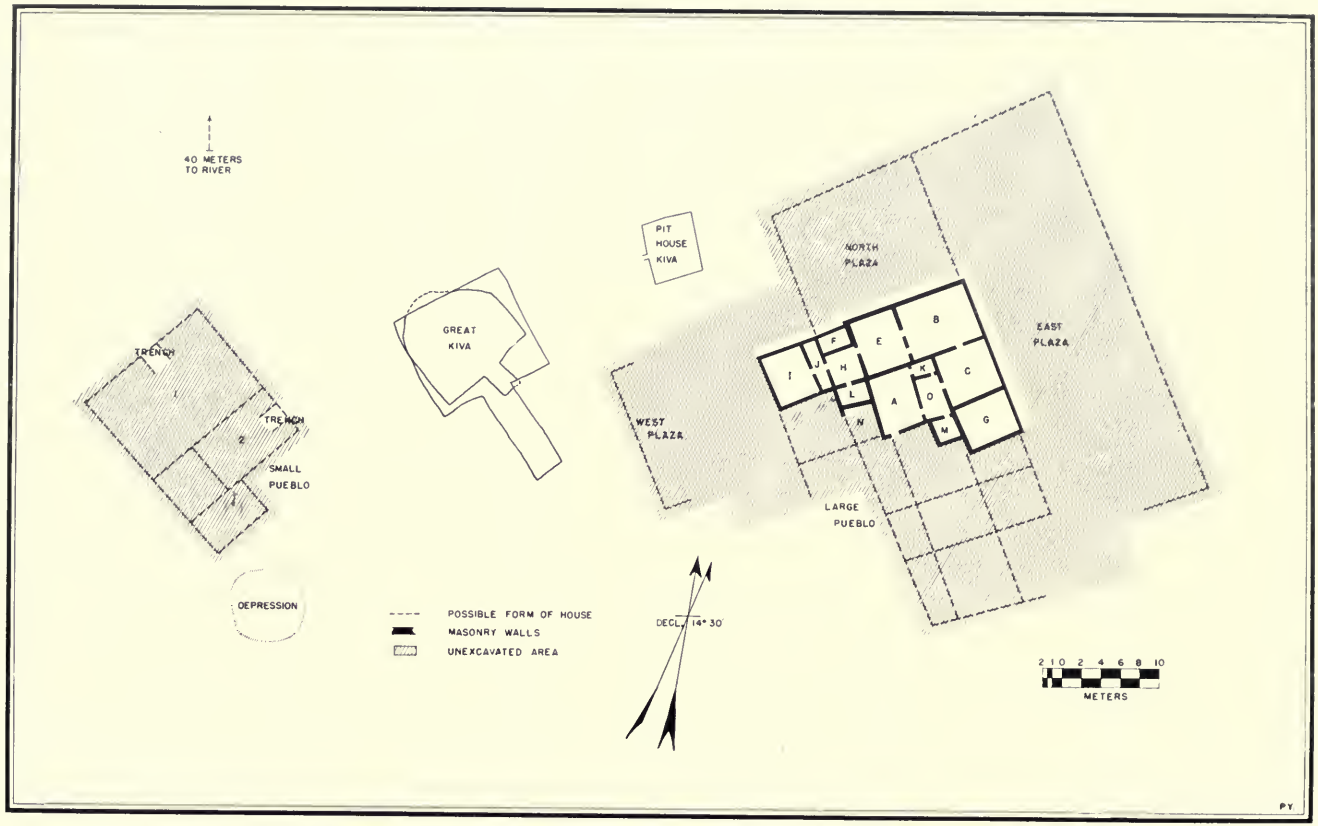

Fig. 1. Plan of Higgins Flat Pueblo.

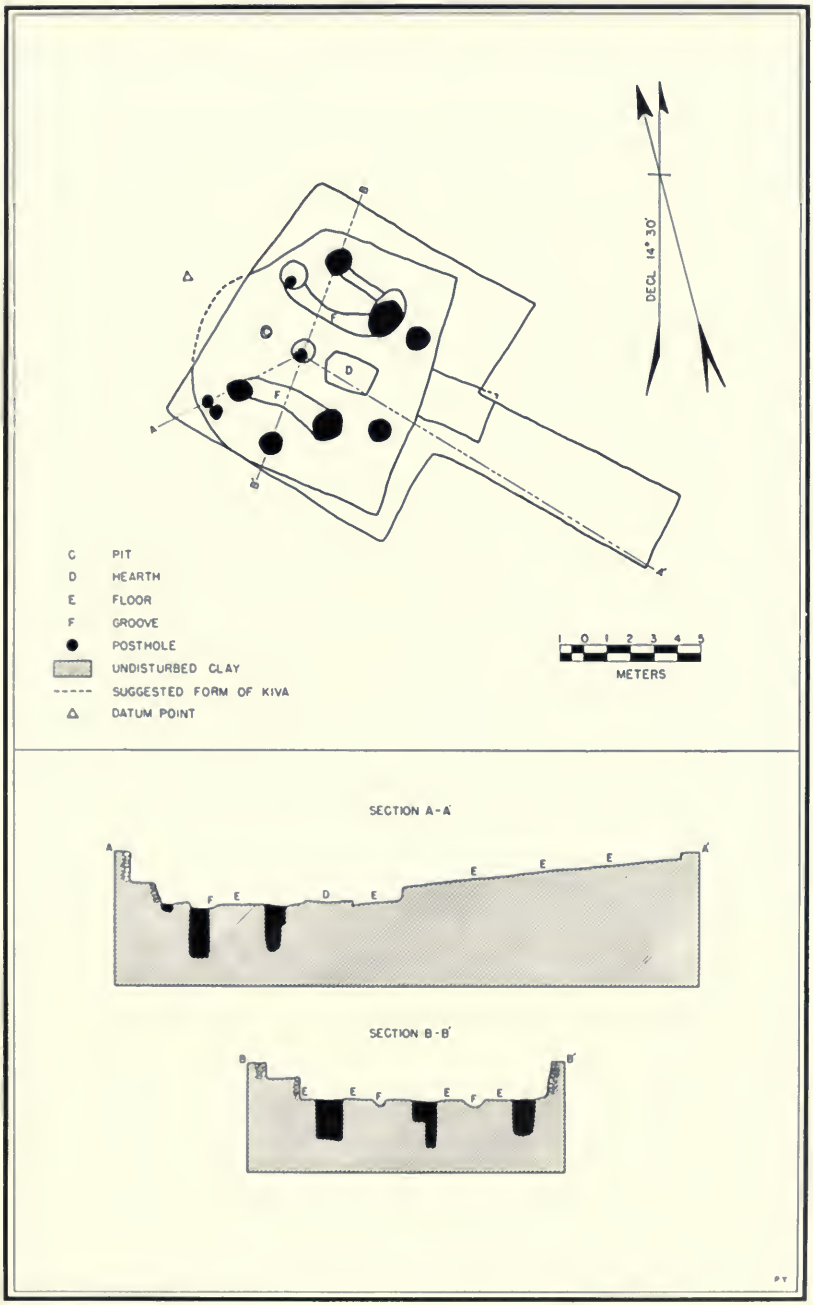

FIG. 2. Plan and sections of Great Kivas, Higgins Flat.

FIG. 3. Great Kivas, Higgins Flat, from the east. Meter stick in far background; surveying rod, 2.5 meters long, in center posthole; an arrow, 50 cm. long, on fire area points north.

irregular in shape, 5 to 18 cm. in diameter. Average thickness of walls, 4 to 6 cm. No spalls. Mortar of local brown-orange adobe. Resembles north wall of Room B in nearby pueblo. Present height, 60 to 88 cm.

LATER: of masonry (fig. 7). Stones are large, unworked river-cobbles; some chosen for one flat side that was laid face out. Larger stones combined with random rubble laid in thick layers of mortar made from local clay. One or two short sections of wall and both walls of later (upper) ramp appear to be of better workmanship, as we found some laminated slabs and shaped blocks of tuff that had been laid in fairly even courses. Most of upper walls look like north wall of Room A in nearby pueblo; walls of

FIG. 4. Great Kivas, Higgins Flat, from the west. Ramp entryway in background; postholes and "grooves" or "foot drums" in foreground. Note axis of earlier (lower) kiva is different from that of later (upper) kiva. Meter stick at left corner of entryway; surveying rod, 2.5 meters long, in center posthole; an arrow, 50 cm. long, on fire area points north.

upper ramp resemble exterior walls of pueblo. Appearance of kiva walls proper (upper) not too important, as they were covered by mud plaster. Uncertain as to whether ramp walls were plastered. Present height (above earlier walls) 66 cm. to 1.25 meters.

"*Offset:*" When later kiva was built, tops of earlier walls may have been removed. Then excavation for larger building was pushed horizontally outward, though not evenly in all directions, thus producing an offset or shelf that varied in width (see ground plan). On this new level (offset), about 80 cm. to 1 meter above the floor, was placed the base or footing of the later walls. Excavation for the later building apparently produced a cut with outer sides gently sloping. The new or later walls were erected and either simultaneously or later the construction cut was backfilled with rubble and dirt. In other words, the later walls acted as a facing, about 20 cm. thick, for the construction trench and debris. Excess dirt and rocks were thrown out of the kiva and formed a ridge (12 to 15 cm. high) that ran around three sides of the kiva and was visible when we first saw the site.

FIG. 5. Detail of Great Kivas, Higgins Flat, from the west. Note differing axis for earlier (lower) kiva, large postholes, and "grooves" or "foot drums." Meter stick near corner of ramp entryway; meter stick 2.5 meters long in center posthole; an arrow, 50 cm. long, on fire area points north.

Floor: Earlier floor was apparently used for later kiva as well. Two coats of plaster were laid over gravelly, sandy, bumpy earth, thus making a smooth, fairly even surface.

Firepit: Raised hearth of indefinite outline; roughly rectangular with one rounded end nearest central posthole; basin of firepit about 5 cm. deep; no coping; some gray ash and bits of charcoal in basin. Beneath this was a second firepit resting directly on floor; in it was a trace of ash.

Ramp Entryways (fig. 8): EARLIER: partially destroyed by later one; low step, 6 cm. high, where ramp joined kiva floor. Orientation 23½° south of east. Width, 2.2 meters; length at present, 3.0 meters, but this probably represents only a portion.

LATER: Ramp floor 24 cm. above kiva floor; orientation 27°10′ south of east. Width, 3.27 meters at inner end and 3.35 meters at outer end; length, 10 meters. Masonry shown in figure 9.

Deflector: None.

Pits: One; deep basin-shape with round opening; diameter at mouth, 50 cm., at bottom, 40 cm.; depth, 25 to 30 cm. Walls and floor of orange-yellow gravelly soil. Contained dark brown soil bearing flecks of charcoal and small pebbles. Located directly back (west) of central posthole. Use unknown.

FIG. 6. Detail of masonry in northeast corner of earlier kiva, Higgins Flat. Meter stick with 10 cm. divisions at right.

FIG. 7. Detail of masonry in south wall of later kiva, Higgins Flat. Meter stick with 10 cm. divisions at left.

FIG. 8. Ramp entryways, looking east, showing relationship of ramp of earlier kiva to that of later one; Great Kiva, Higgins Flat. Meter stick on floor of earlier ramp; 50 cm. arrow points north.

Postholes: Nine gigantic principal ones and two secondary ones. Diameters from 90 cm. to 1.70 meters at top; at bottom, below ledge or offset, 50 to 60 cm. Depths from 1.60 to 2.20 meters. Location: three across center and parallel to earlier front wall (nos. 1–3); the remaining six (nos. 4–9) arranged in quadrilateral pattern, three on either side of firepit. In some postholes were eight or nine very large boulders, ranging in size from 20 by 18 by 16 cm. to 50 by 35 by 35 cm. and weighing between 150 and 200

FIG. 9. Detail of masonry in north wall of later ramp entryway, Higgins Flat. Meter stick with 10 cm. divisions at right.

pounds. In other postholes were from 40 to 50 fist-size rocks about 12 by 15 cm. Purpose of rocks may have been to provide drainage for posts or to wedge or brace the upright posts.

Diameter of two secondary postholes, 50 and 60 cm.; depth, 40 cm.

On the basis of present evidence, we think that postholes 1, 2, and 3 were used to support the roof of the earlier structure, and the remainder (nos. 4–9) that of the later structure.

No postholes were found in either ramp, although Bluhm found several at the Sawmill Site (Bluhm, 1957).

Grooves: Three in number; one between postholes 3 and 5; one between postholes 8 and 9. The use of these grooves is unknown; they may have been used for drainage or for some esoteric purpose.

Roof: Exact character unknown.

Pottery: See sherd analysis (Chapter III).

Artifacts: Worked stone slab laid over groove near posthole no. 4. Two oval painted pebbles, one on either side of firepit near middle points on inner edge of groove between postholes 4 and 5 and on inner edge of groove between postholes 8 and 9. Colors on one pebble were yellow, blue, red; on the other, red and blue. Colors arranged in concentric circles. Three miniature Alma Plain pots found on floor; one in late fill; and one below

later wall. No large restorable pots. See list and description of stone and bone artifacts (Chapter II).

Phases: Earlier (lower) kiva has been placed in the Reserve Phase (about A.D. 1100). Probably contemporaneous with Reserve Phase pueblo that was partly demolished by builders of Higgins Flat Pueblo.

Later (upper) kiva has been placed in the Tularosa Phase (about A.D. 1175) and probably was abandoned about the time the second addition was being made to Higgins Flat Pueblo.

We think that Rooms A (floor 2) and E (floor 3) in Higgins Flat Pueblo may have served as kivas during the building of the larger and later Great Kiva.

(See pottery seriation, fig. 52.)

General Comments: The orientation of the ramp entryway engaged our attention and we wondered if the direction had any significance. It has been noted that the earlier one pointed to $23\frac{1}{2}°$ south of east, and the later one to 27°10′ south of east. The orientation of the ramp at the Sawmill Site is 26° south of east, a reading that is fairly close to that of the ramp in the later kiva at Higgins Flat. Why did the Indians change the direction of their ramp when they rebuilt? Do these readings have any astronomical meaning?

PITHOUSE KIVA, HIGGINS FLAT

(Figures 10–13)

Shape: Rectangular.

Dimensions: 5.95 by 5.15 meters; depth of floor below present surface, 1.55 meters.

Walls: Of masonry; thin veneer laid against dirt sides of excavated pit; no attempt to bind masonry to backing. Consists of a crude mud-rubble, that is, many unshaped cobbles, fist-size and larger, imbedded in great masses of adobe mortar; very little attempt at coursing; gives appearance of being one-third mud and two-thirds cobbles. Now and then one can note a larger, unworked stone, selected for a flat side that was laid face out. Walls in this structure were not so good as the poorer walls within the pueblo, and certainly would have worn down fairly fast if they had been exposed to the elements. Walls probably entirely covered with a light reddish brown mud plaster, remnants of which were found.

Floor: Of adobe plaster over gravelly native soil; fairly smooth.

Firepit: In center of room on one axis, and in line with and near ventilator opening; rectangular, 73 by 83 cm., by 15 cm. deep. Coping of long narrow stone slabs. Ash-filled.

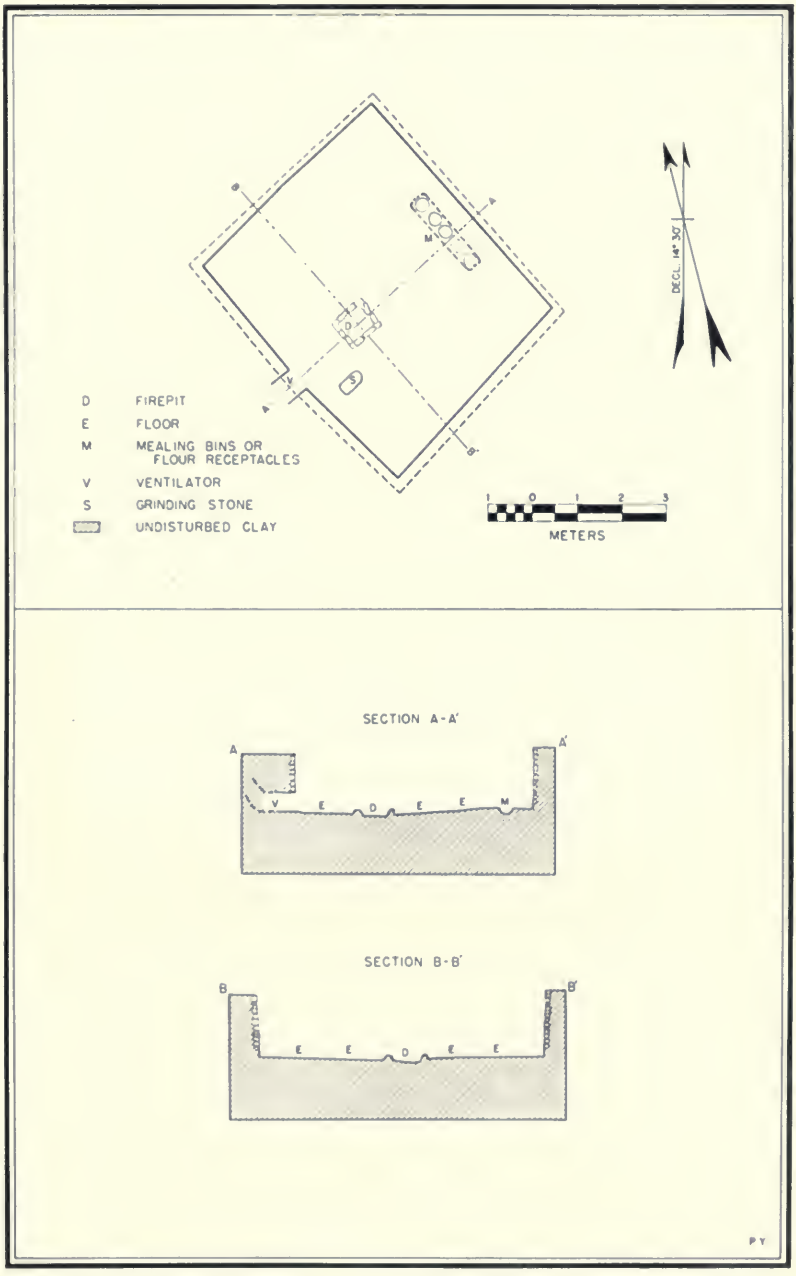

Fig. 10. Plan and sections of Pithouse Kiva, Higgins Flat.

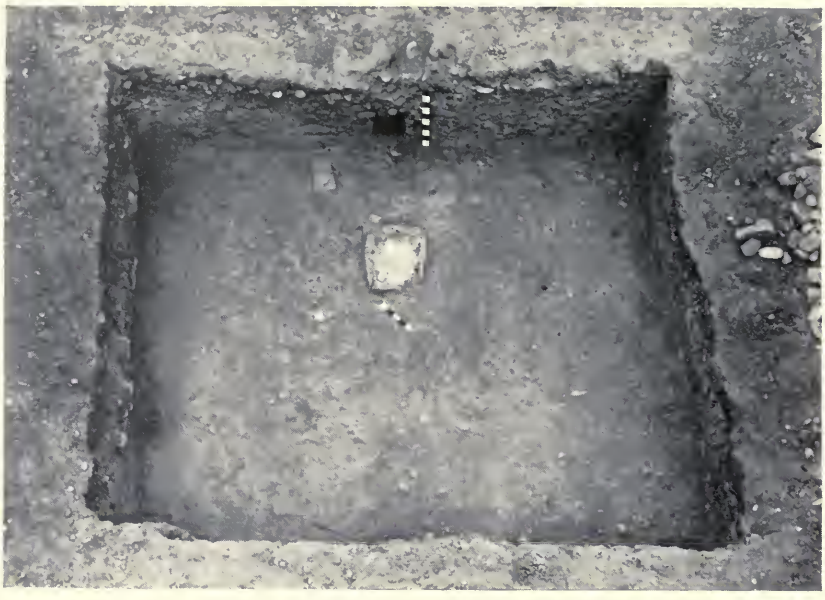

FIG. 11. Pithouse Kiva, Higgins Flat. Meter stick near ventilator opening; arrow, 50 cm. long, near firepit points north.

Ventilator: Tunnel opening in center of southwest wall at floor level. Dimensions of opening, 45 by 45 cm. Tunnel about 25 cm. long; shaft (upright portion) not excavated.

Deflector and Ventilator Cover: None.

Pits: None.

Flour Receptacles: Five in number; four of pottery, tilted at about 20°; had all been plastered over by later floor; each receptacle about 30 cm. square, with adobe or stone slabs for partitions separating them. Counting easternmost as no. 1 and westernmost as no. 5: nos. 1 and 2 each contained a paint-grinding stone stained with hematite paint; nos. 1, 4, and 5 contained Tularosa Fillet Rim bowls; no. 3 contained the body of a Reserve Plain Corrugated jar; no. 2 was empty. Between nos. 4 and 5 was a tabular mano used as coping. Each receptacle from 20 to 25 cm. deep.

Postholes: None found.

Roof: Exact nature unknown; rafters probably rested on tops of walls.

Entrance: Probably through hatchway in roof.

Pottery: See pottery tabulation for this structure (Chapter III).

Artifacts: Two paint-grinding stones in mealing receptacles, and a metate-like grinding stone on floor near ventilator.

FIG. 12. Mealing receptacles, firepit, and ventilator opening after latest floor had been removed; Pithouse Kiva, Higgins Flat. Arrow, 50 cm. long, points north.

Phase: Tularosa Phase; about A.D. 1175, about the middle of the occupation of Higgins Flat Pueblo. (See seriation chart, Chapter III.)

General Comments: This structure has been given the awkward designation "pithouse kiva" because we think it may have served both as a dwelling room and a kiva. It may seem strange that pithouses had again become fashionable. It was hard for us to believe, but we were more or less driven to the conclusion that subterranean rooms had perhaps never become obsolete. At any rate, at least one exists at Higgins Flat Pueblo. Several were found by Dr. Deric O'Bryan at Jewett Gap associated with contemporaneous surface houses of the Tularosa Phase (unpublished data, filed in the Department of Anthropology, University of Arizona).

Four more pithouses, associated with surface rooms, were excavated by Dr. Fred Wendorf near Apache Creek in 1954 (1956). In the same

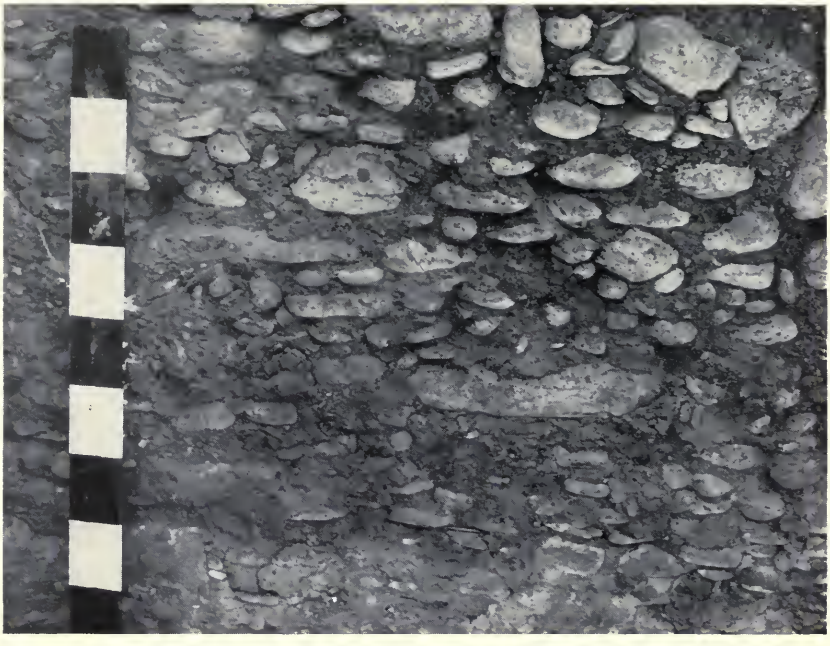

FIG. 13. Masonry in west wall of Pithouse Kiva, Higgins Flat. Meter stick with 10 cm. divisions at left.

phase and sometimes at the same pueblo we have found surface rooms equipped with firepits and ventilators.

Dr. Richard Woodbury told me that he had excavated one or two surface rooms fitted with ventilators and firepits at El Morro National Monument in 1954.

Now which of these is a kiva and which is not? The problem of "when is a kiva" is ably and fully discussed by Smith (1952b), who concluded that a kiva is a kiva when it differs in some way from the other rooms in the unit. I would agree with him completely except for his statement (p. 155) that a site plainly containing a kiva has Anasazi affiliations.

At any rate, the problem of equating form and function is not easy. Whether our pithouse kiva is merely a kiva, and whether the surface rooms provided with ventilators and firepits are either dwelling rooms or kivas, is impossible to decide yet, with any certainty.

One fact should be pointed out here. A fire will not burn without a constant supply of fresh air. Therefore, ventilators may have been built into subterranean rooms or interior, windowless, surface rooms merely to provide oxygen for the fire and with no sacred intentions at all! How hallowed is a ventilator-firepit combination?

On the basis of this evidence, I think that rooms, subterranean or surface, equipped with the special features I have mentioned, may have served for both ceremonial and secular purposes. The Zuñi Indians, with whom the people of the Tularosa Phase may have had cultural relations, are reported to have possessed rooms that served a dual function—secular and religious.

APACHE CREEK PUEBLO

This pueblo (figs. 14, 15) lay on a low ridge a few feet high, about one-half mile southeast of the Apache Creek Store and near the junction of Apache Creek and Tularosa River. It is located in Catron County, New Mexico, in the Apache National Forest (SW¼, NE¼, Sec. 32, Twp. 5 S., R. 17 W., N.M.P.M.). The new Apache Creek–Reserve Highway will destroy part of this site.

The pueblo seems to have been arranged in the shape of a rectangle. The rooms, three deep, had been built in unconnected blocks of 12 to 18 rooms per block or unit. On the inner side of Block II was a plaza, and nearby, on the west, was a subterranean structure. Nine rooms were excavated; the plaza was outlined by trenching, and the subterranean structure bulldozed a bit.

Walls

Foundation: No prepared foundations; masonry starts at floor level.

Types of Masonry: I. Composite product of laminated slabs and shaped blocks of tuff or rough-hewn blocks of igneous rock with flat surfaces towards room laid in fairly even courses in thick layers of mud (fig. 16). Flakes or spalls and slabs inserted in thick mortar to fill in chinks and level courses. No core between faces, only mud mortar. One has impression of a profusion of slabs and few shaped blocks; in an area of masonry one meter square, we found (by actual count) four times as many slabs as blocks; in another, three times as many slabs as blocks.

Upon close inspection, the slabs are really "small" laminated slabs or "large" laminated spalls, depending upon one's point of view. They are not slabs in the Chaco Canyon sense. The larger slabs measure up to 14 by 3 cm.; the smaller ones, 5 by 1 cm. The blocks range in size from 7 by 13 cm. to 20 by 40 cm.

In general, this wall makes a fairly good appearance, but it was probably covered by plaster. This type of masonry is found only in the main walls of the pueblo and not in the later partition walls. One notes the absence of river-cobbles, probably because better material was near at hand.

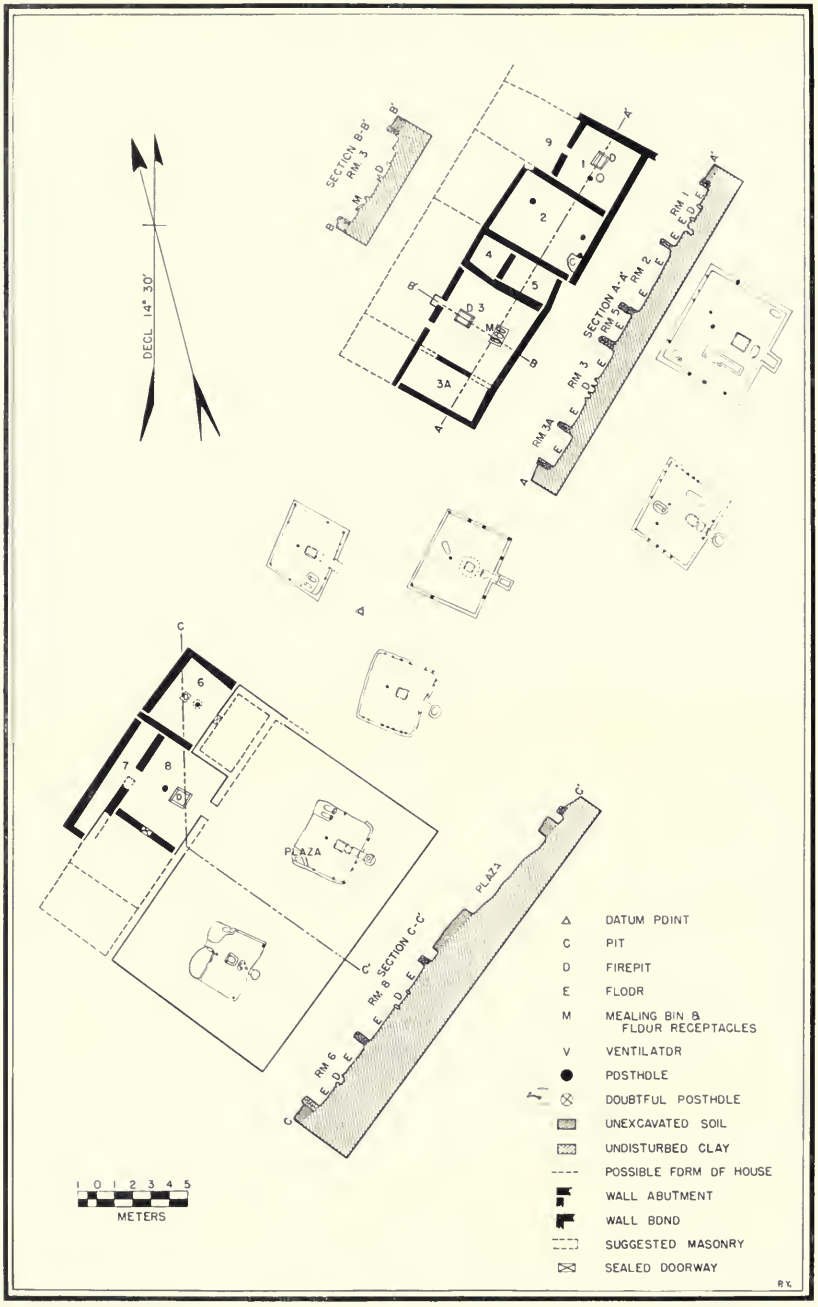

FIG. 14. Plan and sections of Apache Creek Pueblo, and plans of subterranean structures excavated by Museum of New Mexico Highway Salvage Program.

FIG. 15. Rooms 1 to 5, Apache Creek Pueblo. Meter stick in Room 2; arrow, 50 cm. long, points north.

II. Another type (fig. 17) of main wall is similar to Type I, but it presents a more sturdy appearance. It, too, is a composite product of blocks and small, squarish stones or random rubble laid in thick layers of mud mortar. Slabs are infrequent. Mud mortar between core.

III. The later partition walls are crude indeed by comparison; they are made up of random rubble or cobbles and some flakes packed closely in mud mortar. Little attempt at coursing. Such walls are "unspecialized," narrow, insubstantial; apparently they were thrown up in a hurry.

All walls were apparently plastered on the interiors.

FIG. 16. Type I masonry, southeast wall, Room 1, Apache Creek Pueblo. Meter stick in 10 cm. units at left.

Dimensions: Range of width of main walls, 32 to 45 cm.; range of width of later partition walls, 25 to 30 cm.; height of standing walls, 60 cm. to 1.2 meters.

Materials: Those used in walls are tuff, basalt, trachyte. *Joints* not intentionally broken. True-bearing *spalls* infrequent and probably accidental. *Mortar* of tan or gray local adobe. *Plaster*, where found, usually consisted of two layers: a coarse undercoat, about 2 or 3 cm. thick, put on to smooth over rough masonry; and a "finish" coat, usually only 1 or 2 mm. thick, of very fine mud.

Doorways: Only one exterior and it became non-functional when a wall of a later room had been built across the outer or north side. All doorways rectangular; a total of six; doorway in south wall of Room 6 (communicating doorway) was sealed. Height of doorways and types of lintels unknown, as upper portions of walls had collapsed.

Widths varied from 45 to 55 cm.; sills, from 10 to 22 cm. above floors. Placement without apparent plan.

Ventilator (fig. 18): In north wall of Room 3, at floor level; ventilator opening, 40 cm. wide and 50 cm. high. Tunnel (horizontal member), 70 cm. long; former height unknown. "Chimney" or upright portion of

FIG. 17. Type II masonry, southeast wall, Room 3, Apache Creek Pueblo. Meter stick in 10 cm. units at left.

ventilator apparatus must have occupied portion of adjacent room. No deflector; no stone slab to stop up ventilator opening.

Floors

Materials: Of native soil, plastered over with tan-yellow or gray adobe; fairly even.

Mealing Bins and Flour Receptacles (fig. 19): Three metates set at a steep angle in adobe and separated from one another by slabs set in adobe in Room 3. Total length, including metates and copings, 1.1 meters; width, 84 cm. Each bin, 25 to 30 cm. wide; partitions, 6 to 8 cm. thick. Two of the

FIG. 18. Room 3, Apache Creek Pueblo. Mealing bins and receptacles in foreground; firepit in center; ventilator in background. Meter stick between scaled doorway and ventilator opening; arrow, 50 cm. long, points north.

metates are through trough type; one, trough open at one end only. Closed end, however, was at lower end of bin partly covered by plaster and pottery-bowl flour-receptacle. Metates were coarse, medium, and fine. Manos associated with mealing bins were seven in number and were both beveled (one) and tabular (six) types. At lower end of each metate was a Tularosa Fillet Rim bowl set on its side at about a 20° angle in such a way as to place part of the rim just under the metate (fig. 19). In this way, all flour fell or was easily brushed into bowls so that there was no waste. Mealing bins set so close to wall that miller had just enough room for kneeling.

Pit in southwest corner of floor of Room 2; in it were two Tularosa Fillet Rim bowls; dimensions at mouth, 55 by 75 cm.; depth, 30 cm.

Firepits: Five in number; all rectangular. One in Room 1, on floor; coping of stone slabs in adobe; ash-filled; 60 by 55 cm., by 15 cm. deep.

Two in Room 3; one on latest floor with stone slabs in adobe; ash-filled; 60 by 67 cm., by 15 cm. deep. The other in Room 3 on lower, earlier floor, 20 cm. below upper floor; coping of stone slabs; ash-filled; 63 by 73 cm., by 15 cm. deep.

One in Room 6, let into floor so top of adobe coping was flush with floor; 52 by 52 cm., by 15 cm. deep.

FIG. 19. Detail of manos, metates in mealing bins and Tularosa Fillet Rim bowls as receptacles for flour; Room 3, Apache Creek Pueblo. Arrow, 50 cm. long, points north.

One in Room 8; on floor; coping of stone slabs; ash-filled; 76 by 74 cm., by 25 cm.

Ceilings

Height: Not known. On basis of fallen wall rocks, estimated to be about 2 meters.

Type: Unknown except by inference. What evidence we have indicates that the large main beam in each room ran lengthwise and rested on upright posts. In the smaller rooms, the beam-ends may have rested on tops of walls. Impressions on adobe chinking found in Room 3 clearly indicate splints and/or mats were also part of the roofing material. In general, it was probably much like the intact roof found at Hinkle Park Cliff-Dwelling (Martin, Rinaldo, Bluhm, 1954, p. 46).

Artifacts

See list of tools of stone and bone (Chapter II) and one of pottery types (Chapter III). A few of the significant finds are given herewith: a worked slab; through trough metates resting against the walls; manos; Reserve Indented Corrugated jars grouped around the firepit (in Room 3); a San Francisco Red Corrugated jar; two small Reserve Smudged bowls (in Room 3A) and a rectangular stone bowl of pinkish stone of excellent workmanship.

General Comments

Apache Creek Pueblo probably was one story high and probably contained a total of 40 to 50 rooms. Most of the rooms (8 excavated) were used for domestic purposes, a few of the smaller ones for storage. As in all pueblos in this area, a number of changes, alterations, and additions were made from time to time. Room 3 was one of the most interesting rooms. It had not burned, but when abandoned almost everything had been left intact: mealing bins, metates resting against the walls; and cooking pots near the firepit.

An incomplete skeleton was found on the floor of Room 2—one rib, one-half pelvis, and the skull. Probably a disturbed burial. A projectile point was lodged in left mastoid process, and in left occiput was scar of wound or operation(?) that had entirely healed, as bone replacement was complete. Burial was probably placed in already abandoned room.

A skull only was found in small "ash" pit near firepit in Room 1. A trophy(?).

Attention is called to the association of mealing bins, flour receptacles, and ventilator (in Room 3). The same association occurred in Room A and Pithouse 1 at Higgins Flat. We also found mealing bins and flour receptacles in Room C at Higgins Flat, but the ventilator was missing. In its place was a unique feature, the meaning of which is not clear. It consists of a small rectangle, set against the east wall, composed of slabs 15 or 18 cm. high, behind which dirt had been placed. Was this an analogue to a ventilator? Were such rooms also used for ceremonies?

I believe similar associations of grinding bins, flour receptacles, ventilators, and firepits may yet be reported from other nearby digs.

No burned rooms.

Phase: Middle Tularosa Phase as known in this area (A.D. 1150–1200?). The evidence from the floors of the rooms excavated suggests that Apache Creek Pueblo was founded after the nuclear section of Higgins Flat Pueblo was built and was deserted before Higgins Flat Pueblo was finally abandoned.

VALLEY VIEW PUEBLO

(Figures 20–22)

Location: About three miles east of Aragon, New Mexico, on a hill about 200 feet above the Tularosa River, overlooking the new Reserve-Detil highway, at an elevation of about 6,600 feet. The Pueblo is on forest land ($SE\frac{1}{4}$, $SE\frac{1}{4}$, Sec. 15, Twp. 5 S., R. 17 W., N.M.P.M.).

General Appearance: The hill chosen by the builders of this pueblo has steep approaches on the south and west and more gentle slopes on the north and east. It is a defensible site and may have been chosen for that

FIG. 20. Rooms 1 and 2, Valley View Pueblo. Meter stick in background; arrow, 50 cm. long, points north.

reason. The pueblo, apparently built to a plan, is a compact, rectangular unit with a large space (plaza) in the center. There are two more plaza-depressions outside the pueblo, one on the southwest side and one on the north. The unit may have contained from 25 to 35 rooms, one story high. Although the site had been greatly disturbed by pot hunters, we excavated two rooms in the hope that this would be a late site. We were greatly surprised.

Walls

Foundation: No prepared foundation; wall starts at floor level.

Type of Masonry: Mud rubble (fig. 21); rubble consisting of large field stones (35 by 15 cm., 33 by 10 cm.) with flat, unworked surface laid face out. Mud mortar between faces; more slabs than in Apache Creek Pueblo masonry.

Dimensions: Greatest thickness, 35 to 40 cm.; greatest height, 1.20 meters.

FIG. 21. Masonry in east wall, Room 2, Valley View Pueblo. Meter stick at left divided in 10 cm. units.

Materials: Mostly igneous rocks (basalt, trachyte). Surfaces of wall stones unaltered, except in a few instances. *Joints*, unbroken. True bearing *spalls* not observed. Spalls were chips, small slabs, or round pebbles. *Mortar*, brown and gray adobe; soft; some sand temper. *Plaster*, a fine layer of mud, 2 mm. thick, laid over rough, thick coat.

Doorways: None.

Ventilator: One, in east wall of Room 2 at floor level. Opening 36 cm. by 40 cm.; tunnel (horizontal member), 55 cm. long, masonry-lined with slab roof. Ventilator opening closed by stone slab 35 by 37 cm.; slab *in situ* when found (fig. 22). No deflector.

Floor: Of sterile, gravelly soil covered with smooth even coat of adobe plaster, tan in color.

Firepits: One in Room 1; rectangular, not in center of room but set off toward one corner; sunk in floor; no coping. Dimensions: 47 by 60 cm., by 8 to 20 cm. deep. Ash-filled.

One in Room 2; rectangular, directly opposite ventilator; let into floor but stone slabs in coping rose several centimeters above floor; one slab on each side of firepit, but these were broken when roof fell. Dimensions of firepit: 53 by 63 cm., by 20 cm. deep. Ash-filled.

FIG. 22. Detail of firepit and ventilator with slab in place, Room 2, Valley View Pueblo. Meter stick in background; arrow, 50 cm. long, points north toward an indented corrugated jar sunk in floor.

Floor Jar: A large Reserve Indented Corrugated jar let in floor just north of ventilator, with rim flush with floor. Mouth of pot 20 cm. in diameter.

Ceilings

Height: Not known.

Type: Unknown except by inference. Probably main beams spanned the narrow part of the rooms with the ends laid on tops of walls. Secondary(?) supports indicated by postholes located at north and south ends of Room 2. North posthole, 33 cm. in diameter and 40 cm. deep. South posthole, 30 cm. in diameter and 60 cm. deep. A few bits of charred poles and rotten posts found.

Artifacts

Reserve Indented Corrugated jar in floor, in the northwest quadrant of Room 1. Very large and thick Reserve Indented Corrugated jar on floor in northwest quadrant. Miniature bowl near south posthole. Other indented corrugated pots around firepit.

General Comments

Room 1 evidently was a dwelling room. Room 2 was a living room sometimes used for ceremonies (see discussion under Pithouse Kiva, p. 25) because of ventilator. Jar in floor of Room 2 near ventilator, use unknown. Is jar analogue to flour receptacles? Neither room burned.

Phase: Tularosa (about A.D. 1175).

II. Artifacts[1]

By John B. Rinaldo

The accompanying table (fig. 23) indicates the major categories and relative frequencies of the artifacts recovered from the Tularosa Phase sites excavated in 1954. The detailed characteristics and statistics of the smaller categories and of individual artifact specimens may be found on pages 40–88 and in the accompanying illustrations. Further correlative information may be found by consulting our previous published reports on the area (Martin, Rinaldo, and Bluhm, 1954; Martin, Rinaldo, *et al.*, 1952; Martin and Rinaldo, 1940, 1947, 1950a, 1950b). For convenience in comparison the descriptions of artifacts have been grouped in the same order as that in the table (fig. 23), which is also the approximate sequence in which they have been grouped in our previous reports.

As a whole, the artifacts recovered from the sites excavated during the 1954 season provide further evidence of the continuity of Mogollon material culture during prehistoric times in the Reserve area. Although changed somewhat in form and frequency, the major categories, such as manos, metates, choppers, scrapers, flake knives, projectile points, bone awls, bracelets, and stone bowls, are the same as those of Pine Lawn Phase and Pre-pottery times. In fact, if they were mixed with the artifacts from earlier phases it would be impossible to separate out many such Tularosa Phase artifacts on the basis of types. Many of the scrapers, choppers, flake knives, bone awls, and bracelets have their counterparts in the artifacts recovered from the earlier houses and even the Pre-pottery levels in the caves.

On the other hand, although it is evident that the Mogollon people of this area were not quick to accept innovations of a major sort, there is evidence of gradual modification of the culture. Many types of artifacts, such as beveled manos, small, triangular, side-notched projectile points, grooved axes, rectangular arrow shaft tools and rectangular stone bowls, are lacking or rare in the earlier culture. Furthermore, there is a noticeable increase in the frequency of certain artifact types during the Three Circle,

[1] Compiled from field catalogue kept by Eloise A. Barter, Eugene Klotz and John B. Rinaldo.

Reserve, and Tularosa Phases; for example, the two hand, rectangular mano with flat grinding surface (tabular mano), the three quarters grooved maul and ax, the through trough metate and the bone awl made from a deer ulna are all considerably more popular during these late phases.

Some of these changes are apparently related. The increase in frequency of tabular manos is accompanied by a corresponding increase in through trough metates and a decrease in the number of mortars, pestles, one hand manos and metates with trough open at one end only. A greater number of grooved axes appears to be related to a smaller frequency of choppers. An increase in small, triangular, lateral-notched projectile points appears to be related to a decrease in larger diagonal-notched projectile points (ascendancy of the bow and arrow over the atlatl?) and so on. More correlations of this sort are noted below, but this perhaps suffices to indicate the major changes in the tools of the technology.

HANDSTONES

The handstones include manos, rubbing stones, polishing stones, pestles and abrading stones. These are all ground and/or pecked stones that were used in the hand mostly for grinding, milling or polishing. These are generally characterized by broad, flat to convex worked surfaces, and in outline are longer than they are wide. Inasmuch as certain types of handstones grade into one another in form, arbitrary limits of length were set up to distinguish between them as follows: Two hand manos (above 15 cm.); one hand manos (10–15 cm.); rubbing stones (7–10 cm.); polishing stones (up to 7 cm.); abrading stone (made of fine vesicular scoria).

The manos from the Tularosa Phase are more carefully shaped than most of those from the earlier phases. Whereas the manos from the Pine Lawn Phase (Martin and Rinaldo, 1940, p. 38) and many even from the Three Circle Phase (Martin and Rinaldo, 1950a, pp. 309–311) were manufactured from field-stones or river-cobbles of convenient size and shape and with a minimum of shaping previous to use, the majority of those from the Tularosa Phase were most probably shaped to a rectangular form and the surface roughly prepared for grinding on a particular metate before use. In fact such "manos," which we have termed "mano blanks," and a graded series showing progressively more use and wear were recovered from both Apache Creek and Higgins Flat pueblos.

The greater popularity of the long, two hand tabular manos (manos with rectangular outlines and flat grinding surfaces) and of the beveled manos during the Tularosa Phase at Higgins Flat Pueblo, Apache Creek Pueblo, and Valley View Pueblo corroborates a trend noted

ARTIFACTS \ LOCATIONS	HIGGINS FLAT PUEBLO				APACHE CREEK PUEBLO			VALLEY VIEW PUEBLO	ALL SITES
	GREAT KIVA	PIT HOUSE KIVA	SMALL PUEBLO	TOTAL	ROOMS 1-5	ROOMS 6-8	TOTAL	ROOMS 1-3	GRAND TOTAL
GROUND AND PECKED STONE									
MANOS	10	8	3	21	115	26	141	25	187
RUBBING STONES	9			9	5	1	6	2	17
POLISHING STONES	15			15	1		1		16
PESTLES	1			1	3		3		4
ABRADING STONES	1			1	3	1	4		5
METATES	1			1	12	6	18	2	21
SMALL METATE-LIKE STONES		1		1	1		1		2
WORKED SLABS	1			1	2	1	3	4	8
PAINT GRINDING STONES		2		2	2	1	3		5
PAINTED STONES	2			2					2
STONE BOWLS	4			4	4	3	7	3	14
HAMMERSTONES	1			1	2	1	3		4
AXES	1			1	1	2	3	1	5
MAULS	2			2	2		2		4
ARROW SHAFT TOOLS	1			1	2	1	3	1	5
FLESHING KNIFE						1	1		1
BEADS	3			3					3
PENDANT	1			1					1
PIPE								1	1
CHIPPED STONE									
HOES	2			2	8		8		10
PROJECTILE POINTS	3	1		4	6		6	1	11
DRILLS	2			2					2
FLAKE KNIVES	27	4		31	4	1	5	3	39
SCRAPERS	15	6	1	22	1		1	3	26
CHOPPERS	1	3		4	1	1	2		6
SHELL									
BRACELETS	1			1	1		1		2
BEAD	1			1					1
BONE									
TUBE					1		1		1
GAMING PIECE					1		1		1
AWLS	1		1	2	13	5	18	2	22
ANTLER									
FLAKERS		1		1	2		2		3
CLAY									
WORKED SHERDS	8	4		12	3	4	7	1	20
ANIMAL EFFIGY	1			1					1
MISCELLANEOUS									
INCISED STONE					1		1		1
PIGMENTS	2	1		3	2	1	3		6
TOTAL NUMBER	117	31	5	153	199	56	255	49	457

FIG. 23. The major categories and relative frequencies of the artifacts from Tularosa Phase sites.

in previous seasons (Martin and Rinaldo, 1950b, p. 451; Martin, Rinaldo, and Bluhm, 1954, p. 101). At the same time, the small number of one hand manos and manos oval in outline except in the earlier levels of the rectangular Great Kiva also corroborates trends reported previously (Martin, Rinaldo, *et al.*, 1956, p. 58).

The smaller number of polishing stones recovered from the Tularosa Phase sites might be correlated inversely with the greater quantity of indented corrugated and other textured pottery recovered. Almost all the polishing stones recovered during the 1954 season came from the rectangular Great Kiva at Higgins Flat Pueblo with its earlier levels of occupation and their greater proportion of all-over polished pottery. This also corroborates a trend previously noted (Martin, Rinaldo, and Antevs, 1949, p. 215; Martin, Rinaldo, *et al.*, 1952, p. 110).

The functional relationship of manos to metates in the grinding process was indicated by the direct association of these artifacts in Room 3, Apache Creek Pueblo. Here six tabular manos (field nos. 219, 221, 222, 224, 226, 227) were found with three through trough metates in mealing bins (field nos. 210, 211, 215). In the same room two tabular manos (field nos. 224, 225) and one beveled mano (field no. 223) were resting on the floor next to through trough metates leaning against the wall back of the mealing bins and in the corner nearby. Other manos (field nos. 222, 236) formed a part of the partition between the mealing bins. Still another mano (field no. 99) was found in the partition between the meal receptacles in the Pithouse Kiva at Higgins Flat Pueblo.

CLASSIFICATION OF MANOS

(Figures 24–27)

Single Grinding Surface

CLASS I, A

Description: Oval in outline, surfaces parallel, grinding surface convex (fig. 24, *b*). Total 3.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill and floor; Pithouse Kiva, floor.

Dimensions: Length, 10.7, 12.6, 10.3 cm.; width, 8.1, 9.8, 8.7 cm.; thickness, 6.4, 5.3, 3.5 cm.

CLASS I, B

Description: Oval in outline, surfaces parallel, grinding surface slightly convex. Total 3.

Occurrence: Higgins Flat Pueblo, Room 2, trench; Apache Creek Pueblo, fill.

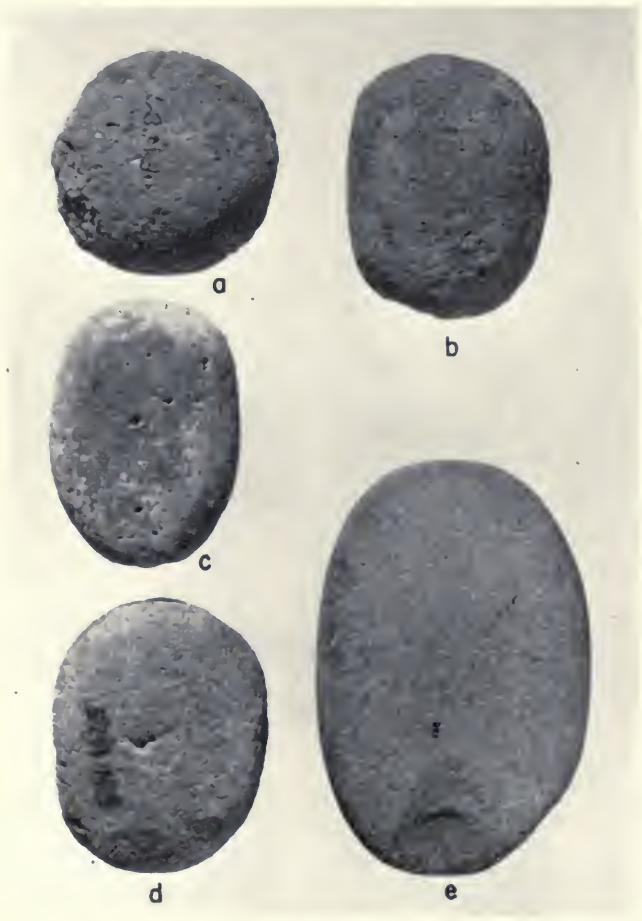

FIG. 24. Oval one hand manos and round rubbing stone. Length of *a*, 9.5 cm.

Dimensions: Length, 12.7, 13.8, 11.7 cm.; width, 10.9, 11.0, 10.0 cm.; thickness, 2.8, 4.2, 5.7 cm.

CLASS I, C

Description: Oval in outline, surfaces parallel, grinding surface flat (fig. 24, *e*). Total 6.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill; Pithouse Kiva, fill; Apache Creek Pueblo, Room 1, floor; Room 2, fill.

Dimensions: Length, 19.7, 17.0, 11.1 cm., remainder fragments; width, 11.4, 8.8, 10.8, 13.7, 11.1, 9.5 cm.; thickness, 4.3, 4.3, 5.1, 7.0, 5.8, 6.2. cm.

CLASS I, D

Description: Rectangular in outline, one specimen wedge-shaped in cross section, the others with surfaces parallel, grinding surface convex (fig. 25, *a*). Total 5.

Occurrence: Apache Creek Pueblo, Rooms 2, 3, 4, fill; Room 2, floor; Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Length, 18.5, 15.7, 21.5, 19.7 cm., fragment; width, 10.2, 9.5, 11.2, 11.4, 6.0 cm.; thickness, 3.5, 4.2, 3.3, 3.2, 4.5 cm.

CLASS I, E

Description: Rectangular in outline, surfaces parallel, grinding surface convex lengthwise, slightly convex crosswise, two specimens wedge-shaped in cross section, the others with surfaces parallel (fig. 25, *c*, *d*). Total 7.

Occurrence: Apache Creek Pueblo, Room 2, fill; Rooms 2, 3, floor; Valley View Pueblo, Room 2, floor.

Dimensions: Length, 17.6, 16.7, 15.8, 20.4, 18.2, 19.6 cm., fragment; width, 11.0, 10.4, 10.2, 11.8, 10.3, 11.1, 10.5 cm.; thickness, 4.3, 2.2, 4.6, 4.1, 3.7, 4.3, 3.0 cm.

CLASS I, F

Description: Rectangular in outline, surfaces parallel, grinding surface slightly convex. Total 3.

Occurrence: Apache Creek Pueblo, Room 2, fill; Rooms 3, 8, floor.

Dimensions: Length, 20.4, 18.4, 22.5 cm.; width, 10.7, 10.7, 12.3 cm.; thickness, 3.1, 5.1, 4.0 cm.

CLASS I, G

Description: Rectangular in outline, one specimen wedge-shaped in cross section, the others with surfaces parallel, grinding surface flat (fig. 25, *b*). Total 49.

Occurrence: Apache Creek Pueblo, Rooms 1, 2, 3, fill; Rooms 1, 3, 3A, floor; Valley View Pueblo, Room 2, fill and floor; Higgins Flat Pueblo, Pithouse Kiva, floor; Room 1, fill.

Dimensions: Length, 14.6–25.3 cm., average, 20.3 cm.; width, 7.2–14.6 cm., average, 10.4 cm.; thickness, 1.1–8.3 cm., average 4.4 cm.

CLASS I, H

Description: Rectangular in outline with grinding surface beveled in a double plane with a longitudinal ridge between, the other surface flat and rough. Total 7.

Occurrence: Apache Creek Pueblo, Rooms 3, 8, fill and floor; Valley View Pueblo, Rooms 2, 3, fill.

FIG. 25. Rectangular two hand manos. Length of *d*, 15.8 cm.

Dimensions: Length, 21.1, 21.4, 16.5 cm., remainder fragments; width, 10.9, 10.6, 8.6, 9.9, 7.5, 8.9, 10.6 cm.; thickness, 2.1, 3.6, 3.3, 2.5, 3.0, 4.2, 2.8 cm.

Two Grinding Surfaces

CLASS II, A

Description: Oval in outline, surfaces parallel, grinding surfaces convex. Total 1.

Occurrence: Higgins Flat Pueblo, Pithouse Kiva, floor.

Dimensions: Length, 16.8 cm.; width, 11.7 cm.; thickness, 6.3 cm.

CLASS II, B

Description: Oval in outline, wedge-shaped in cross section, grinding surfaces slightly convex. Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Length, 11.1 cm.; width, 9.7 cm.; thickness, 6.1 cm.

CLASS II, C

Description: Oval in outline, one specimen wedge-shaped in cross section, the other with surfaces parallel, grinding surfaces flat, seven specimens of one hand manos (fig. 24, *d*), two specimens of two hand manos. Total 9.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill and floor; Apache Creek Pueblo, Rooms 2, 3, 5, fill; Room 3, floor 2.

Dimensions: Length, 10.9–17.5 cm., average, 13.8 cm.; width, 8.2–11.8 cm., average, 10.0 cm.; thickness, 2.3–6.1 cm., average, 4.2 cm.

CLASS II, D

Description: Oval in outline, surfaces parallel, one grinding surface convex, the other flat (fig. 24, *c*). Total 1.

Occurrence: Apache Creek Pueblo, Room 5, fill.

Dimensions: Length, 10.8 cm.; width, 7.7 cm.; thickness, 4.8 cm.

CLASS II, E

Description: Oval in outline, wedge-shaped in cross section, one grinding surface slightly convex, the other flat. Total 1.

Occurrence: Apache Creek Pueblo, Room 1, floor.

Dimensions: Length, (fragment) 9.9 cm.; width, 7.9 cm.; thickness, 3.1 cm.

CLASS II, F

Description: Rectangular in outline, surfaces parallel, grinding surfaces convex. Total 2.

Occurrence: Apache Creek Pueblo, Room 2, fill.

Dimensions: Length, 18.5 cm., fragment; width, 10.8, 8.5 cm.; thickness, 3.2, 2.8 cm.

CLASS II, G

Description: Rectangular in outline, one specimen wedge-shaped in cross section, the others with surfaces parallel, grinding surfaces slightly convex. Total 3.

Occurrence: Apache Creek Pueblo, Rooms 2, 3, fill; Valley View Pueblo, Room 2, fill.

FIG. 26. Rectangular two hand manos. Length of *c*, 21.7 cm.

Dimensions: Length, all fragments; width, 11.2, 9.0, 9.8 cm.; thickness, 3.0, 3.4, 2.5 cm.

CLASS H, H

Description: Rectangular in outline, one specimen wedge-shaped in cross section, the others with surfaces parallel, grinding surfaces flat (fig. 26, *a*). Total 37.

Occurrence: Higgins Flat Pueblo, Great Kiva, floor; Pithouse Kiva, floor; Room 1, fill; Apache Creek Pueblo, Rooms 1, 2, 3, 8, fill; Rooms 1, 2, 3, 4, 8, floor.

Dimensions: Length, 10.2–29.3 cm., average, 20.7 cm.; width, 8.6–12.4 cm., average, 10.6 cm.; thickness, 1.1–6.9 cm., average, 3.9 cm.

CLASS II, I

Description: Rectangular in outline, surfaces parallel, one grinding surface convex, the other flat (fig. 26, *b*). Total 15.

Occurrence: Apache Creek Pueblo, Rooms 1, 2, 3, 6, 8, fill.

Dimensions: Length, 16.1–18.6 cm., average, 17.7 cm.; width, 8.1–11.0 cm., average, 10.0 cm.; thickness, 2.2–6.4 cm., average, 3.5 cm.

CLASS II, J

Description: Rectangular in outline, surfaces parallel, one grinding surface slightly convex, the other flat (fig. 26, *c*). Total 6.

Occurrence: Apache Creek Pueblo, Rooms 2, 3, fill and floor.

Dimensions: Length, 18.2, 17.7, 21.7 cm., remainder fragments; width, 10.4, 9.4, 9.5, 9.9, 10.8, 10.3 cm.; thickness, 3.2, 3.5, 4.1, 2.8, 3.7, 4.7 cm.

CLASS II, K

Description: Rectangular in outline, both grinding surfaces beveled in a double plane with a longitudinal ridge between (fig. 27, *a*). Total 4.

Occurrence: Apache Creek Pueblo, Room 2, fill; Room 1, floor; Valley View Pueblo, Room 2, floor.

Dimensions: Length, 20.1 cm., remainder fragments; width, 6.9, 7.4, 10.2, 10.2 cm.; thickness, 2.4, 2.5, 4.4, 2.7 cm.

CLASS II, L

Description: Rectangular in outline, one grinding surface convex, the other beveled (fig. 27, *b*). Total 3.

Occurrence: Higgins Flat Pueblo, Great Kiva, floor; Apache Creek Pueblo, Room 6, floor and fill.

Dimensions: Length, 23.1 cm., remainder fragments; width, 10.9, 9.8, 7.8 cm.; thickness, 3.2, 3.8, 3.0 cm.

CLASS II, M

Description: Rectangular in outline, one grinding surface flat, the other beveled (fig. 27, *c*). Total 12.

Occurrence: Apache Creek Pueblo, Rooms 1, 2, 3, fill and floor; Room 3A, floor; Valley View Pueblo, Room 2, fill and floor.

Dimensions: Length, 12.6–23.2 cm., average, 18.0 cm.; width, 7.2–11.7 cm., average, 9.4 cm.; thickness, 1.8–4.0 cm., average, 2.9 cm.

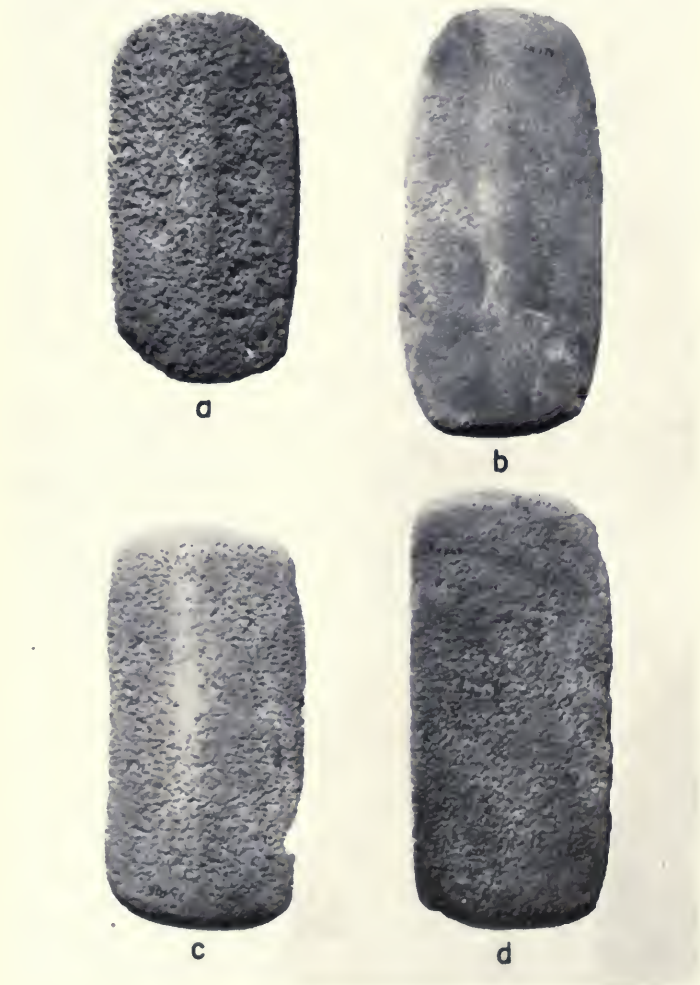

FIG. 27. Rectangular two hand manos. Length of *d*, 24.4 cm.

CLASS II, N

Description: Rectangular in outline, surfaces parallel, one grinding surface flat, the other convex lengthwise, slightly convex crosswise (fig. 27, *d*). Total 5.

Occurrence: Apache Creek Pueblo, Rooms 1, 3, 8, fill; Room 8, floor; Valley View Pueblo, Room 2, floor.

Dimensions: Length, 18.2, 24.4, 20.4 cm., remainder fragments; width, 9.5, 11.0, 10.5, 9.8, 8.6 cm.; thickness, 3.2, 2.3, 4.1, 4.2, 3.3 cm.

CLASS II, O

Description: Rectangular in outline, surfaces parallel, one grinding surface flat, the other slightly convex lengthwise, convex crosswise. Total 2.

Occurrence: Higgins Flat Pueblo, Pithouse Kiva, floor; Valley View Pueblo, Room 3, fill.

Dimensions: Length, 12.9, 24.2 cm.; width, 9.0, 12.3 cm.; thickness, 5.0, 6.1 cm.

CLASS II, P

Description: Mano blanks, rectangular in outline, surfaces parallel, flat, rough, surfaces and edges worked. Total 2.

Occurrence: Apache Creek Pueblo, Room 3, fill and floor.

Dimensions: Length, 22.8 cm., fragment; width, 10.8, 14.4 cm.; thickness, 4.0, 3.6 cm.

Materials: Scoria, basalt, sandstone, granite, quartzite, rhyolite.

CLASSIFICATION OF RUBBING STONES

(Figures 24, 28, 29)

Single Rubbing Surface

CLASS I, A

Description: Oval in outline, rubbing surface convex, smooth (fig. 28, *a*). Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, lateral entry floor.

Dimensions: Length, 8.4 cm.; width, 7.4 cm.; thickness, 3.3 cm.

CLASS I, B

Description: Oval in outline, rubbing surface slightly convex, smooth (fig. 28, *c*, 29, *a*). Total 2.

Occurrence: Higgins Flat Pueblo, Great Kiva, lateral entry, fill and floor.

Dimensions: Length, 6.4, 8.6 cm.; width, 5.3, 7.5 cm.; thickness, 1.0, 3.0 cm.

CLASS I, C

Description: Oval in outline, rubbing surface flat, smooth (fig. 28, *e*, 29, *b–f*). Total 7.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill and floor; from Apache Creek Pueblo, Rooms 2 and 3A, fill.

Dimensions: Length, 7.2, 9.8, 8.6, 7.1, 8.4, 7.7, 7.0 cm.; width, 6.2, 8.5, 5.0, 5.2, 4.2, 5.3, 4.6 cm.; thickness, 1.8, 4.3, 1.4, 2.6, 2.0, 2.6, 1.7 cm.

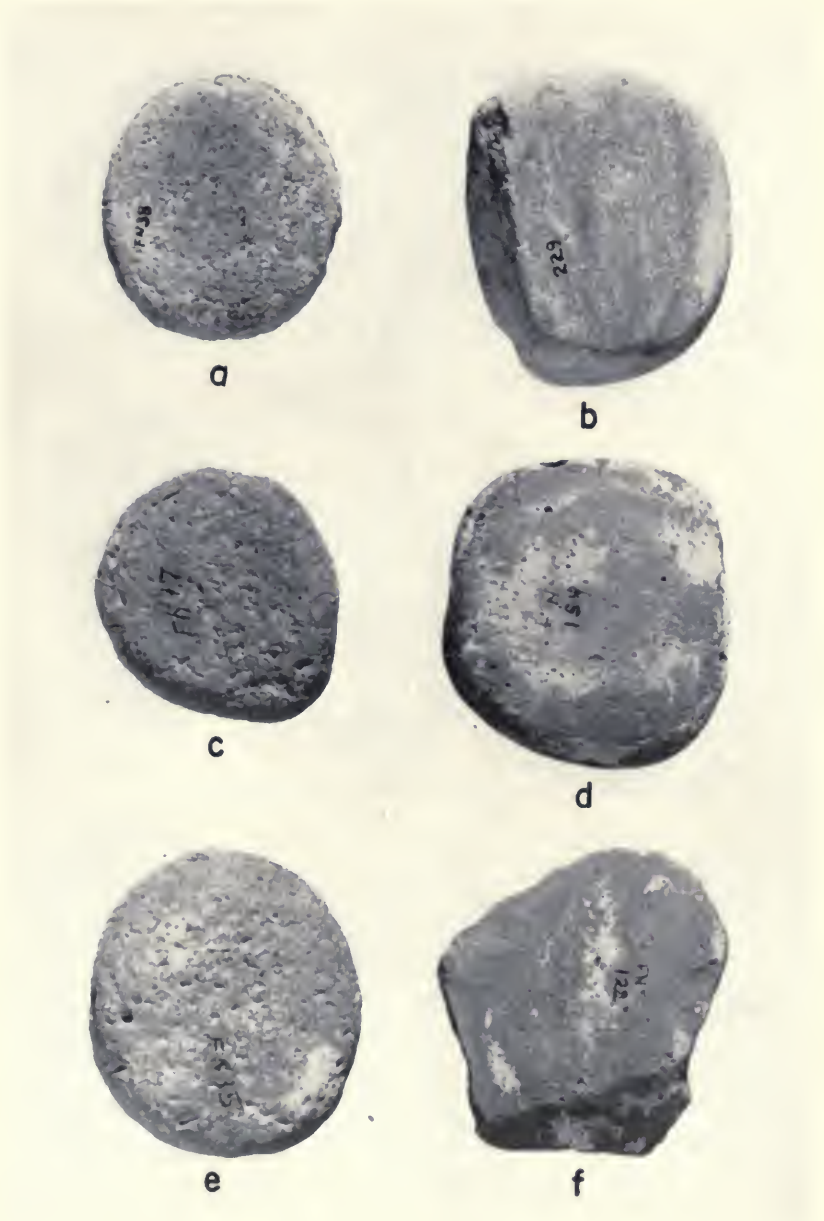

FIG. 28. Oval and oblong large rubbing stones. Length of *f*, 9.9 cm.

CLASS I, D

Description: Rectangular in outline, rubbing surface flat, smooth (fig. 29, *g*, *h*). Total 2.

Occurrence: Valley View Pueblo, Room 2, fill and floor.

Dimensions: Length, 8.8, 7.5 cm.; width, 4.3, 5.5 cm.; thickness, 2.4, 2.2 cm.

Two Rubbing Surfaces

CLASS II, A

Description: Round in outline, rubbing surfaces slightly convex, smooth (fig. 24, *a*). Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, floor.

Dimensions: Length, 9.5 cm.; width, 9.1 cm.; thickness, 6.0 cm.

CLASS II, B

Description: Oval in outline, rubbing surfaces flat, smooth (fig. 28, *b*, *d*). Total 2.

Occurrence: Apache Creek Pueblo, Room 3, fill; Room 1, floor.

Dimensions: Length, 9.9, 9.9 cm.; width, 9.0, 7.9 cm.; thickness, 2.5, 5.2 cm.

CLASS II, C

Description: Rectangular in outline, rubbing surfaces flat, smooth (fig. 29, *i*). Total 1.

Occurrence: Apache Creek Pueblo, Room 6, floor.

Dimensions: Length, 7.9 cm.; width, 3.8 cm.; thickness, 2.0 cm.

CLASS II, D

Description: Roughly oblong in outline, rubbing surfaces beveled (fig. 28, *f*). Total 1.

Occurrence: Apache Creek Pueblo, Room 2, fill.

Dimensions: Length, 9.9 cm.; width, 9.1 cm.; thickness, 3.3 cm.

Materials: Basalt, quartzite, granite, sandstone, rhyolite.

CLASSIFICATION OF POLISHING STONES

(Figure 30)

Single Facets

CLASS A

Description: Oval in outline, facet slightly convex, smooth (fig. 30, *a*). Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, lateral entry floor.

Dimensions: Length, 5.3 cm.; width, 3.0 cm.; thickness, 0.6 cm.

FIG. 29. Oval and rectangular small rubbing stones. Length of *i*, 7.9 cm.

CLASS B

Description: Oval in outline, facet flat, smooth (fig. 30, *b–d*). Total 6.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill and floor.

Dimensions: Length, 6.6, 6.7, 4.7, 5.7, 3.5, 3.2 cm.; width, 4.5, 4.0, 3.7, 4.2, 2.1, 2.6 cm.; thickness, 3.7, 1.2, 1.7, 2.0, 2.1, 0.6 cm.

CLASS C

Description: Round in outline, facet flat, smooth (fig. 30, *e*). Total 2.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Diameter, 4.0, 4.1 cm.; thickness, 2.1, 0.7 cm.

Two or More Facets

CLASS A

Description: Oval in outline, facets flat, smooth (fig. 30, *f*, *g*). Total 2.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Length, 5.8, 5.0 cm.; width, 4.8, 3.7 cm.; thickness, 1.5, 3.2 cm.

CLASS B

Description: Triangular in outline, facets flat, smooth (fig. 30, *h*, *i*), Total 2.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill; Apache Creek Pueblo, Room 3A, floor.

Dimensions: Length, 4.4, 5.8 cm.; width, 3.7, 4.0 cm.; thickness, 1.9, 3.1 cm.

CLASS C

Description: Finger shape, facets flat, smooth. Total 2.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Length, 4.4, 4.0 cm.; width, 2.1, 1.4 cm.; thickness, 2.1, 1.0 cm.

Materials: Rhyolite, granite, sandstone, chalcedony, diabase.

CLASSIFICATION OF PESTLES

CLASS A

Description: Long angular stone, rectangular in cross section, one surface worn smooth; one end pecked and battered, the other broken (fig. 31, *a*). Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Length, 19.0 cm.; width, 7.1 cm.; thickness, 6.3 cm.

FIG. 30. Polishing stones. Length of *i*, 4.4 cm.

CLASS B

Description: Center section of pestle(?), a cylindrical section of stone, possibly intentionally smoothed. Total 1.

Occurrence: Apache Creek, Room 3, fill.

Dimensions: Length, fragment; width, 8.2 cm.; thickness, 7.3 cm.

CLASS C

Description: Multiface type; rectangular in outline and cross section, surfaces ground and pecked, ends convex and battered (fig. 31, *c*, *d*). Total 2.

Occurrence: Apache Creek Pueblo, Rooms 1, 4, fill.

Dimensions: Length, 11.7, 13.4 cm.; width, 6.7, 8.8 cm.; thickness, 6.6, 8.5 cm.

Materials: Granite, rhyolite.

ABRADING STONES

Description: Rectangular in outline, surfaces parallel, one surface flat, the other slightly concave or flat, two specimens with sharp corners (fig. 39, *b*, *c*, *f*, *i*, *j*). Total 4.

Occurrence: Apache Creek Pueblo, Room 3, fill; Rooms 3, 8, floor.

Dimensions: Length, 8.6, 10.7, 15.0, 11.9 cm.; width, 6.8, 7.5, 7.7, 8.1 cm.; thickness, 3.1, 6.3, 4.7, 3.6 cm.

Material: Basaltic scoria.

GRINDING STONES

The grinding stones include all the lower milling stones such as metates, small metate-like grinding stones, paint grinding stones and mortars. Their grinding surfaces are usually characterized by a certain amount of dimpling; that is, small shallow pits probably made with a hammerstone. However, there is usually a gradation (especially in the metate troughs) from those with quite coarse, dimpled surfaces to those with smooth, fine surfaces, for the finer type of milling. The metates are also characterized by striations that run lengthwise in the troughs.

The metate with trough closed at one end was apparently no longer used during the Tularosa Phase. The only metate definitely of this type recovered during the 1954 season was a fragmentary specimen from the fill of the Higgins Flat Pueblo, Great Kiva. Two marginal specimens of this type were found at Apache Creek Pueblo, but on one specimen the narrow "shelf" or closed end is below the rim of the mealing bin (fig. 32), and on the other the narrow shelf slopes down away from the trough, rather than leveling off as in the average metate of this type. Nor does the trough bot-

FIG. 31. Pestles (multiface, long angular) (*a*, *c*, *d*) and hammerstones (*b*, *e*). Length of *e*, 16.5 cm.

tom slope up sharply to this "shelf." The majority of the metate troughs have fairly level bottoms, a few are concave, and one specimen is convex. On two specimens the trough slopes at an angle of about 30° to the bottom of the metate; the remainder of the specimens have bottoms and trough surfaces that are virtually parallel. Those found *in situ* in the bins were tipped at an angle of about 30° (fig. 32). One specimen had a grinding surface on both of the broad faces.

The small number of metate-like grinding stones recovered from Tularosa Phase sites is consistent with the trend noted elsewhere in the Reserve area (Martin and Rinaldo, 1950a, Table 9, p. 357). There is a marked decrease in the frequency of these objects subsequent to the Pine Lawn Phase.

The association of metates and manos indicating their use together has been discussed above.

The worked slabs were probably used as door, hatchway, or ventilator closing slabs. One slab was found in place in the opening of the ventilator at Valley View Pueblo, Room 2. Two others were found near the southwest walls of Rooms 1 and 2, Apache Creek Pueblo. Neither of these appear to have been used as grinding slabs or *piki* slabs, as they do not exhibit grinding surfaces or burned surfaces. Another worked slab was found across the grooves leading to one of the northwest postholes in the Higgins Flat Pueblo, Great Kiva.

Most of the paint grinding stones are small and resemble manos in shape. The red paint is confined to a small circular area. Although none of the hematite lumps recovered showed facets, the evidence from the nearby rooms recovered in 1953 (Martin, Rinaldo, *et al.*, 1956, pp. 72–73) would indicate that the paint was ground by rubbing the hematite lump directly on a grinding stone, rather than crushing it between two stones.

There is not a sharp distinction between stones with fairly regular spots of paint on them and some painted slabs on which the design is vague. However, the painted stones recovered from the Higgins Flat Pueblo have distinct "bull's-eye" designs on them. The one, found 113 cm. northwest of the firepit, was in red and blue-green; the other, found 200 cm. south of the firepit, was in three colors—red, yellow and green. There is a distinct resemblance between the design on these circular stones and that on the disc-shaped slab found in Room E, Higgins Flat Pueblo, with the carved stone animals and the painted bowls. These objects probably have ceremonial significance. Although some fragmentary stone bowls were found in the Higgins Flat Pueblo, Great Kiva, none were painted, and it seems only barely possible that they had any relationship to the painted stones.

The majority of the stone bowls have smooth exteriors and interiors, and it seems improbable that they were used as mortars. However, two have rough interiors and another shows traces of red paint. Still another is clearly a rectangular stone bowl in process; one square corner has been shaped and smoothed, but the remainder of the vessel is only roughly blocked out. Rectangular stone bowls or mortars are rare in the Southwest; however, one is illustrated by Hough (1914, p. 31, fig. 50) from the Spur Ranch near Luna, about twenty miles northwest of Apache Creek.

FIG. 32. Metates and manos *in situ*, Room 3, Apache Creek Pueblo.

CLASSIFICATION OF METATES

CLASS A

Description: Slab type, large thick slab, generally oblong in outline with flat grinding surface; edges of grinding surface slope up slightly to form very low rim; incipient through trough type. Total 1.

Occurrence: Apache Creek Pueblo, Room 1, fill.

Dimensions: Length, 54.9 cm.; width, 29.3 cm.; thickness, 14.7 cm.

CLASS B

Description: Trough type, open at one end only, made from unshaped rectangular block, grinding surface worn to shallow trough which slopes up sharply at closed end. Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Length, fragment; width, 32.1 cm.; thickness, 10.1 cm.

CLASS C

Description: Through trough type, generally oblong or rectangular blocks of stone with shallow trough-shaped grinding surface open at both ends, sides and bottom shaped (figs. 33, 34). Total 19.

Occurrence: Apache Creek Pueblo, Rooms 1, 2, fill; Rooms 1, 3, 5, 8, floor; Valley View Pueblo, Room 2, floor.

Dimensions: Length, 40.5–54.9 cm., average, 47.9 cm.; width, 19.3–39.6 cm., average, 30.9 cm.; thickness, 3.5–17.0 cm., average, 9.3 cm. Width of trough, 19.3–30.0 cm., average, 24.4 cm.; depth of trough, 0.5–7.0 cm., average, 2.9 cm.

SMALL, METATE-LIKE GRINDING STONES

Description: Thick slabs of stone, oblong in outline, with smooth, flat or slightly concave grinding surface, sides and bottom unworked (fig. 35). Total 2.

Occurrence: Higgins Flat Pueblo, Pithouse Kiva, floor; Apache Creek Pueblo, Room 3, floor.

Dimensions: Length, 37.0, 38.0 cm.; width, 29.0, 26.0 cm.; thickness, 7.2, 6.9 cm.

CLASSIFICATION OF WORKED SLABS

CLASS A

Description: Thin stone slabs, roughly rectangular in outline; surfaces smooth, flat; edges pecked to shape, ends naturally beveled. Total 5.

Occurrence: Apache Creek Pueblo, Rooms 1, 2, 5, fill; Valley View Pueblo, Room 2, fill.

Dimensions: Length, 57.8, 50.2, 32.0, 29.0 cm., one fragment; width, 45.5, 40.3, 35.0, 32.0 cm., one fragment; thickness, 5.7, 2.6, 4.0, 2.0, 5.0 cm.

CLASS B

Description: Thin stone slabs, roughly rectangular, with one curved end in outline; surfaces smooth, flat, edges worked (fig. 22). Total 3.

Occurrence: Higgins Flat Pueblo, Great Kiva, floor; Valley View Pueblo, Room 2, ventilator, fill.

Dimensions: Length, 50.1, 36.0, 37.5 cm.; width, 46.2, 28.5, 35.1 cm.; thickness, 3.1, 2.1, 5.5 cm.

CLASSIFICATION OF PAINT GRINDING STONES

CLASS A

Description: Pebbles, roughly oval to oblong in outline, with two flat parallel surfaces worn smooth by grinding, one of which shows traces of red paint (fig. 36, *a*, *d*). Total 2.

Occurrence: Higgins Flat Pueblo, Pithouse Kiva, flour receptacles.

Dimensions: Length, 11.8, 13.8 cm.; width, 8.7, 8.1 cm.; thickness, 2.6, 4.3 cm.

FIG. 33. Through trough type metate. Length, 52.0 cm.

FIG. 34. Scoria metate. Length, 45.7 cm.

FIG. 35. Small, metate-like grinding stone. Length, 37.0 cm.

CLASS B

Description: Roughly rectangular in outline, surfaces parallel, shaped by pecking; one surface shows traces of red paint; two specimens mano blanks, the third a mano (fig. 36, *b*, *c*). Total 3.

Occurrence: Apache Creek Pueblo, Rooms 2, 6, fill; Room 1, floor.

Dimensions: Length, 21.0, 19.0, 19.4 cm.; width, 10.9, 8.8, 9.0 cm.; thickness, 4.6, 4.0, 5.0 cm.

Materials: Rhyolite, basalt.

PAINTED STONES

Description: Flat, smooth stone, roughly circular in outline with concentric circles painted in a "bull's-eye" design on one face; one specimen with red circles on a blue-green background, the other with circles in yellow, blue-green and red (fig. 36, *e*, *f*). Total 2.

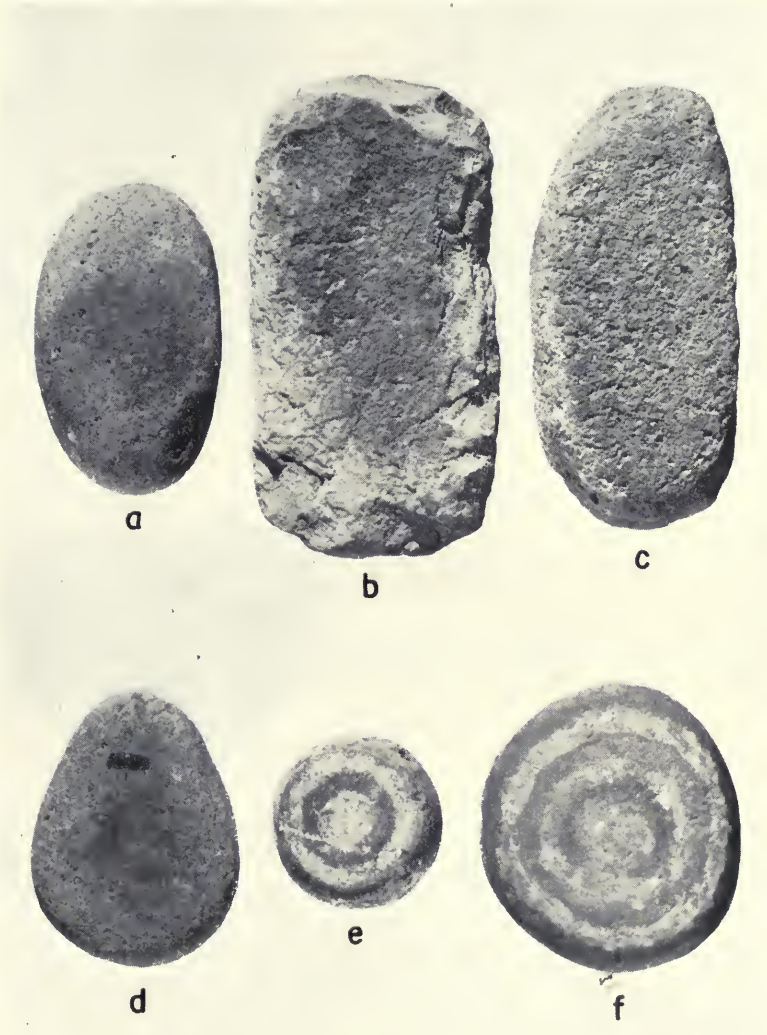

FIG. 36. Paint grinding stones (*a–d*) and painted stones (*e, f*). Diameter of *f*, 12.7 cm.

Occurrence: Higgins Flat Pueblo, Great Kiva, floor near firepit.
Dimensions: Diameter, 7.6, 12.7 cm.; thickness, 3.8, 3.2 cm.
Material: Rhyolite.

CLASSIFICATION OF STONE BOWLS

CLASS A

Description: Rectangular shape, both interior and exterior worked smooth, regular and symmetrical (fig. 37, *d*, *e*). Total 3.

Occurrence: Apache Creek Pueblo, Room 2, fill; Rooms 3, 8, floor.

Dimensions: Length, 12.4, 12.7, 15.3 cm.; width, 11.2, 12.0 cm., fragment; thickness, 1.5, 1.4, 1.4 cm.; height, 6.9, 8.9 cm., fragment; depth of bowl, 5.5, 7.7, 3.9 cm.

CLASS B

Description: Rectangular with rounded corners in outline, carefully smoothed exterior, interior shaped by pecking and left rough (fig. 37, *b*). Total 1.

Occurrence: Apache Creek Pueblo, Room 7, fill.

Dimensions: Length, 13.5 cm.; width, 11.8 cm.; height, 7.0 cm.; thickness, 2.2 cm.

CLASS C

Description: Round in outline, interior generally smooth, exterior shaped, dimpled, somewhat rough (fig. 37, *c*). Total 4.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill; Apache Creek Pueblo, Room 3, fill; Room 6, floor.

Dimensions: Diameter, 8.4 cm., remainder fragments; thickness, 3.1, 2.4, 4.8, 1.8 cm.; height, 4.8, 5.7, 7.8 cm., fragment; depth of bowl, 1.5, 4.0, 6.8 cm., fragment.

CLASS D

Description: Fragments with broken rims, roughly oval or round in outline, sides rough; one specimen a blank for rectangular bowl with one corner worked to shape, others with smooth bowls (37, *a*). Total 3.

Occurrence: Apache Creek Pueblo, Room 3, fill; Valley View Pueblo, Room 1, fill, floor.

Dimensions: Length, 18.8, 17.0 cm., fragment; width, 14.2, 13.7 cm., fragment; thickness, 2.8, 3.6, 5.8 cm.; height, 6.1, 7.0 cm., fragment; depth of bowl, 4.0, 1.8 cm., fragment.

CLASS E

Description: Rim fragments of round or oval bowls, interior smooth, exterior somewhat rough. Total 3.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill, floor; Valley View Pueblo, Room 2, fill.

Dimensions: Thickness, 1.8, 1.7, 4.4 cm.

Materials: Claystone, fine-grained rhyolite.

HAMMERSTONES

Description: Re-used manos with battered, broken and chipped ends; roughly oblong in outline, some grinding surfaces intact (fig. 31, *b*, *e*). Grooves and shallow holes on each side of two specimens. Total 4.

Occurrence: From Higgins Flat Pueblo, Great Kiva, floor; Apache Creek Pueblo, Room 8, fill.

Dimensions: Length, 9.4, 11.8, 12.5, 16.5 cm.; width, 8.1, 11.0, 5.2, 11.9 cm.; thickness, 6.9, 8.1, 4.5, 8.5 cm.

Materials: Quartzite, limestone.

GROOVED STONE TOOLS

The axes reflect influences from both north and south. We believe that none of them were made locally, that the full grooved axes were traded in from the north and the three quarters grooved axes from the south (Martin, Rinaldo, Bluhm, 1954, p. 116). The bit of only one of the axes is broken. The others are smooth and were ground and polished to a sharp edge. All of the axes are relatively short (none more than 13.8 cm. long) and have short polls, from one-fourth to one-third the total length of the specimens. Hafted axes as distinguished from chopper or hand axes were most popular during the Tularosa Phase. They do not appear in this area prior to the San Francisco Phase and never exceed choppers in favor.

Two of the mauls are three quarters grooved. The other two specimens appear to have been three quarters grooved, but one edge is so battered and broken as to make exact determination impossible. All the three quarters grooved tools appear to have been made for a J haft, as the side where the groove is lacking is flattened. The three quarters grooved maul is rare during the earlier phases of the sequence in the area, and becomes only slightly more popular later.

CLASSIFICATION OF AXES

CLASS A

Description: Full grooved type, with a short poll, blade ground and polished to shape, groove about three-fourths of length from bit end. Groove pecked (fig. 38, *e*). Total 2.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill; Apache Creek Pueblo, Room 3, floor.

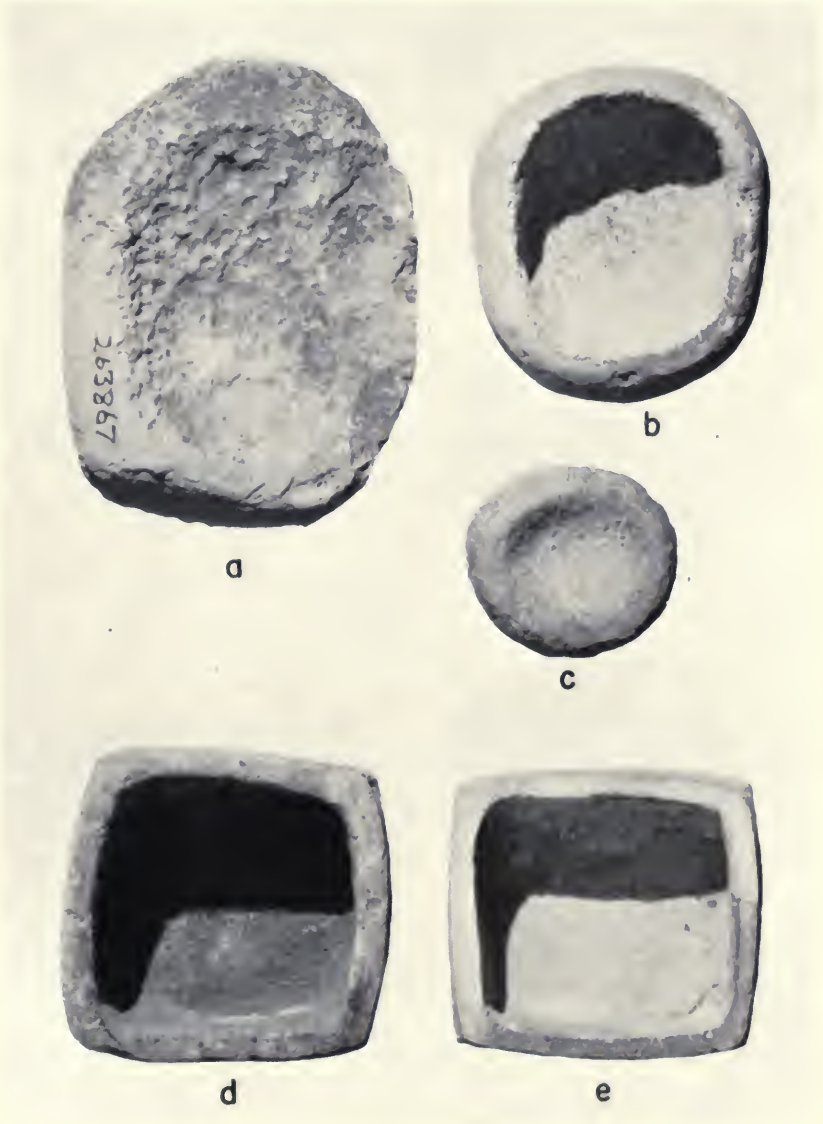

FIG. 37. Rectangular and round stone bowls. Length of *c*, 12.4 cm.

Dimensions: Length, 13.2 cm., fragment; width, 7.5, 4.8 cm.; thickness, 5.1, 4.6 cm.

CLASS B

Description: Three quarters grooved type, with a short poll, blades ground and polished to shape, one broken, groove pecked two-thirds to three-fourths of length from bit end (fig. 38, *a*, *c*). Total 3.

Occurrence: Apache Creek Pueblo, Room 8, fill; Valley View Pueblo, Room 2, floor.

Dimensions: Length, 10.7, 13.8 cm., fragment; width, 7.0, 8.1 cm., fragment; thickness, 4.6, 6.5 cm., fragment.

Materials: Basalt, diabase.

CLASSIFICATION OF MAULS

Description: Three quarters grooved type; three specimens oval to rectangular in cross section with some flat surfaces and ends; one specimen round in cross section, round on one end, groove pecked three-quarters to seven-eighths of distance around middle (fig. 38, *b*, *d*, *f*). Total 4.

Occurrence: Higgins Flat Pueblo, Great Kiva, floor and fill; Apache Creek Pueblo, Rooms 2, 3A, fill.

Dimensions: Length, 12.0, 12.6, 13.5 cm., fragment; width, 10.1, 9.2, 10.0, 7.4 cm.; thickness, 6.2, 6.0, 7.0, 6.5 cm.

Materials: Basalt, basaltic scoria, decomposed rhyolite.

ARROW SHAFT TOOLS

In general, two forms of arrow shaft tools occur in the Reserve area: one is shaped and rectangular in outline; the other is made from an ordinary naturally shaped pebble, usually oval in outline and unmodified except for the groove (or grooves) which cross the surface. The majority of the specimens have the groove running across the surface from side to side rather than from end to end. Although a few are made of coarse-grained abrasive stone, most of the tools are of the "straightener" type (Toulouse, *in* Kluckhohn and Reiter, 1939, p. 81) and are of fine-grained stone with a polished groove. The grooves are U-shaped and are scored longitudinally with tiny parallel scratches. None of the specimens have the ridge or crest characteristic of the Gallina artifacts (Hibben, 1938, p. 136), and which occasionally is found on arrow shaft smoothers from late Pueblo sites farther south (Woodbury, 1954, pp. 110–111; Haury, 1945, p. 139).

CLASSIFICATION OF ARROW SHAFT TOOLS

CLASS A

Description: Naturally shaped generally oval stone with one or two transverse polished grooves (fig. 39, *d*, *g*). Total 3.

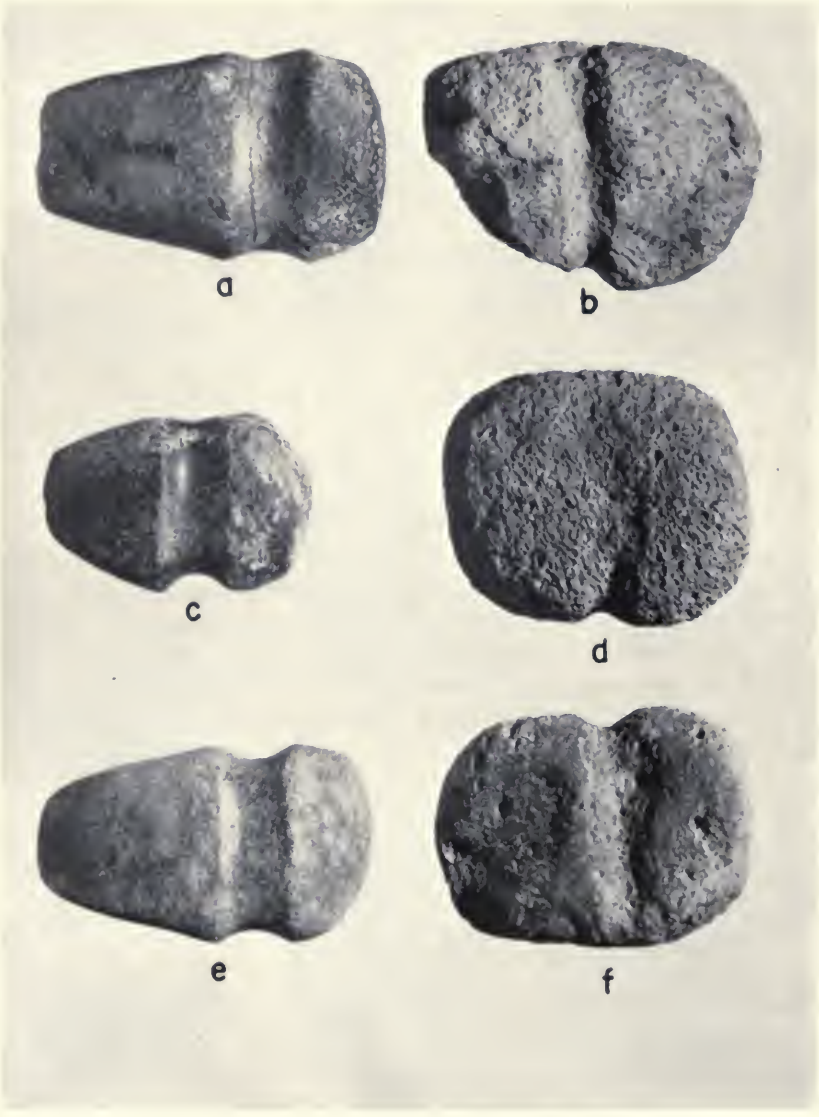

FIG. 38. Grooved axes (*e*, full groove) and mauls. Length of *e*, 13.2 cm.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill; Apache Creek Pueblo, Room 1, fill; Valley View Pueblo, Room 1, fill.

Dimensions: Length, 9.7, 8.3 cm., fragment; width, 8.2, 7.3, 4.5 cm.; thickness, 2.6, 3.2, 2.7 cm.; width of groove, 1.5, 1.1, 1.3 cm.

CLASS B

Description: Rectangular piece of stone, artificially shaped with single polished transverse groove (fig. 39, *a*, *h*). Total 2.

Occurrence: Apache Creek Pueblo, Rooms 3, 8, floors.

Dimensions: Length, 7.4, 7.2 cm.; width, 6.6, 5.7 cm.; thickness, 3.0, 2.8 cm.; width of groove, 1.0, 1.1 cm.

Materials: Diorite, limestone, sandstone.

SMOOTH FLESHING KNIFE OR SAW

Description: Semi-lunar in outline with curved edge chipped to sharpen it, then worn smooth and dull by use; faces ground smooth, wedge-shaped in cross section; broad, shallow notch at one end (fig. 39, *e*). Total 1.

Occurrence: Apache Creek Pueblo, Room 8, floor.

Dimensions: Length, 12.5 cm.; width, 9.5 cm.; thickness, 1.9 cm.

Material: Fine-grained rhyolite.

STONE ORNAMENTS

The stone ornaments from the Tularosa Phase sites are few in number and relatively characterless. The beads are of the simple disc type found throughout the Southwest. The pendant is an unfinished specimen.

It could be significant that all these were found in Higgins Flat Pueblo, Great Kiva, in as much as ornaments from previous seasons have more often been associated with burials or in rooms with possible "ceremonial" features.

BEADS

Description: Simple, small stone disc beads, centrally perforated, holes drilled from both sides (fig. 40, right). Total 3.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Diameter, 0.4, 0.35, 0.55 cm.; thickness, 0.2, 0.1, 0.25 cm.

Materials: Turquoise, jet, limestone.

PENDANT

Description: Thin, flat, oval pebble with hole drilled part way through from one side near one end. Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Length, 3.5 cm.; width, 2.6 cm.; thickness, 0.5 cm.

Material: Sandstone.

PIPE

Description: Fragment of partially manufactured tubular stone pipe, exterior ground smooth; hole drilled in one end, not completed; shape of half a cylinder.

FIG. 39. Abrading stones (*b*, *c*, *f*, *i*, *j*), arrow shaft tools (*a*, *d*, *g*, *h*) and fleshing knife (*e*). Length of *j*, 15.0 cm.

FIG. 40. Disc beads. Diameter of left specimen, 1.2 cm.

Occurrence: Valley View Pueblo, Room 2, fill.

Dimensions: Diameter, 4.0 cm.; diameter of hole, 1.0 cm.; depth, 1.3 cm. (present).

Material: Scoria.

HOES

Although these specimens conform to the ordinary description for stone hoes (Haury, 1934, p. 120; Cosgrove, H. S. and C. B., 1932, p. 45) their use as such remains putative. Only one fragment from the Reserve area sites (Higgins Flat Pueblo, Great Kiva) is notched for hafting, and several specimens are worn along one edge more than along the broad end. They may be generally related to the prehistoric cultivating tools which are called *tchamahia*. There is a broad similarity in outline between some of these thin plate-like hoes and the *tchamahia* (Woodbury, 1954, p. 107; also compare Morris, 1919, fig. 12, *a*, with Cosgrove, H. S. and C. B., 1932, pl. 44, *b*). They are more common in the Mimbres area than in sites farther north (Nesbitt, 1931, p. 80; Cosgrove, H. S. and C. B., 1932, p. 45). In general, they have a sporadic distribution in the Reserve area, although they occur from the Pine Lawn Phase (Martin, 1943, p. 222) up through the Tularosa Phase (Apache Creek and Higgins Flat pueblos). There are two large spots of hematite on the surface of one specimen.

CLASSIFICATION OF HOES

CLASS A

Description: Thin plates of stone, generally oblong in outline; edges and ends chipped; one edge and/or one end worn smooth from use; two

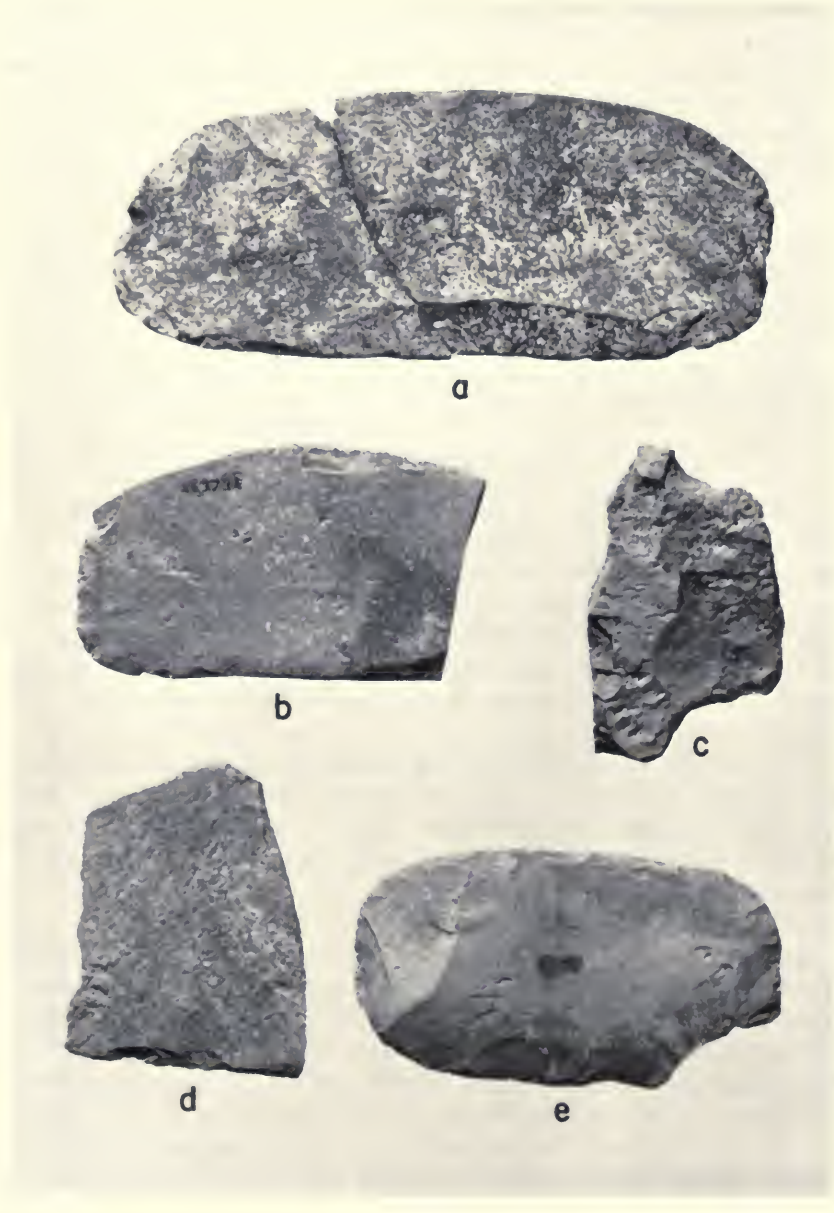

FIG. 41. Stone hoes (*c*, notched). Length of lower right, 16.8 cm.

specimens with scratches at right angles to long axis (fig. 41, *a*, *b*, *d*, *e*). Total 9.

Occurrence: Apache Creek Pueblo, Rooms 2, 3, 5, fill; Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Length, 16.3, 25.2 cm., remainder fragments; width, 5.4–12.1 cm., average, 7.2 cm.; thickness, 0.7–1.4 cm., average, 1.1 cm.

Material: Fine-grained basalt.

CLASS B

Description: Thin plate of stone, generally oblong in outline, two corners notched (fig. 41, *c*). Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Length, fragment; width, 11.9 cm.; thickness, 1.5 cm.

Material: Fine-grained basalt.

CHIPPED STONE

The majority of the projectile points and/or blades recovered during the 1954 season are small, basically triangular in shape, lenticular in cross section and with fine to medium flaking. Concave or indented bases are common, and a few of the points are lateral notched. In addition to this group of small triangular points there is one medium-sized leaf-shaped point, two small diagonal-notched points with sharp down-raking barbs, and one larger point with a contracting stem. None of the points have ground edges.

With two exceptions (the leaf-shaped blade and the contracting stem point) it seems probable that they were used as arrowheads because of their small size. One point (no. 263820) was found in the dirt immediately behind the mastoid process of a fragmentary burial (no. 2–2) on the floor of Room 2, Apache Creek Pueblo. However, there was no other direct evidence recovered as to the use of these points.

As a group they corroborate the late distribution of these types of points observed during previous seasons. With one exception (the point with contracting stem) they belong to types found in sites and levels of the San Francisco through Tularosa Phases and were found most frequently in the Tularosa Phase. They most closely resemble points found at Hinkle Park and Cosper Cliff-Dwellings (Martin, Rinaldo, and Bluhm, 1954, p. 125).

Only two drills were recovered, one a long, slender point with abruptly widening flange base, and the other a long, slender flake which has been sharpened to a point by fine, small flaking. The paucity of drill points recovered may be corroboration of a similar situation noted in the cave sites (Martin, Rinaldo, and Bluhm, 1954, p. 141) where fewer drills were found in the upper levels than in the lower levels.

The majority of the knives are simple, unshaped flake tools. Some of them have a little microscopic flaking or retouch along one edge, possibly due to use. The scrapers, on the other hand, have definitely been sharpened by flaking, but from one surface only. These are also divisible into classes such as side scrapers and end scrapers, although many were undoubtedly multiple purpose tools. There is no particular uniformity in outline for these tools, although many tend to be oblong.

The choppers recovered from the Tularosa Phase sites indicate the continuation in use of this tool in spite of the presence also of the grooved (hafted) ax. We may conjecture that choppers had some particular use for which the hafted ax was not suited. Only one of the choppers, however, is of the scraper-plane type, that is, sharpened from one face only. The others are sharpened from both surfaces. Two specimens were chipped to shape over all the surfaces, even to the extent of flaking one edge dull for a grip. The others have some weathered surfaces left intact for a grip. None was shaped by any other technique, such as grinding or polishing.

CLASSIFICATION OF PROJECTILE POINTS

CLASS A

Description: Small, triangular, lateral-notched, lenticular in cross section, flaking fine, edges straight, three specimens with indented base (fig. 42, *f–i*). Total 4.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill, posthole; Apache Creek Pueblo, Room 3, fill; Room 2, floor with burial.

Dimensions: Length, 1.3, 2.1, 1.6, 1.6 cm.; width, 0.7, 1.1, 0.9, 0.8 cm.; thickness, 0.2, 0.2, 0.2, 0.2 cm.

Materials: Obsidian, chalcedony, chert.

CLASS B

Description: Small, triangular, with concave or straight base; lenticular in cross section, flaking fine, edges straight (fig. 42, *c*, *j*, *k*). Total 3.

Occurrence: Higgins Flat Pueblo, Pithouse Kiva, fill; Apache Creek Pueblo, Rooms 3, 5, floor.

Dimensions: Length, 1.4, 2.8, 2.4 cm.; width, 1.1, 1.0, 1.2 cm.; thickness, 0.3, 0.3, 0.4 cm.

Materials: Obsidian, jasper.

CLASS C

Description: Small, triangular, diagonal-notched, sharp down-raking barbs, expanding stem narrower than blade, lenticular in cross section, flaking fine, convex edges (fig. 42, *l*, *m*). Total 2.

Occurrence: Apache Creek Pueblo, Room 3, fill; Valley View Pueblo, Room 2, fill.

Dimensions: Length, fragment, 2.2 cm.; width, 1.1, 1.1 cm.; thickness, 0.3, 0.2 cm.

Material: Obsidian.

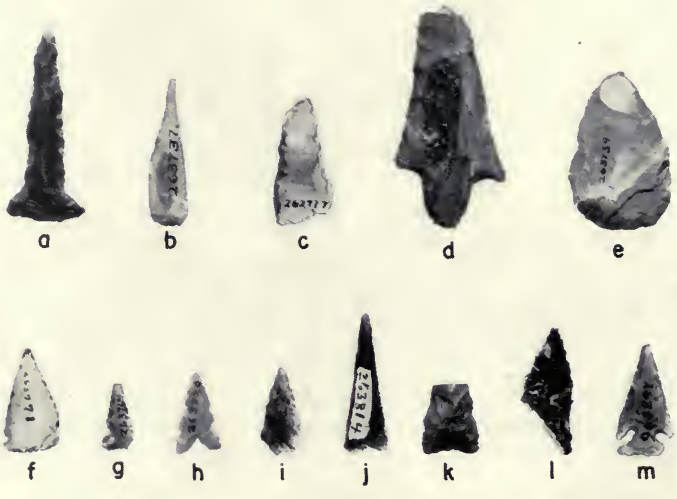

FIG. 42. Projectile points (*c–m*) and drills (*a, b*), miscellaneous types. Length of lower right, 2.2 cm.

CLASS D

Description: Medium-sized leaf-shaped point, lenticular in cross section, base convex, edges convex, chipping medium coarse (fig. 42, *e*). Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Length, 3.1 cm.; width, 2.0 cm.; thickness, 0.5 cm.

Material: Chert.

CLASS E

Description: Contracting stem, corner-notched, down-raking barbs, lenticular in cross section, concave edges, coarse flaking (fig. 42, *d*). Total 1.

Occurrence: Apache Creek Pueblo, Room 1, pit with burial 1–4.

Dimensions: Length, 4.3 cm.; width, 2.1 cm.; thickness, 0.6 cm.

Material: Fine-grained basalt.

FIG. 43. Flake knives. Length of lower right specimen, 4.5 cm.

FIG. 44. Side scrapers. Length of lower right specimen, 5.2 cm.

CLASSIFICATION OF DRILLS

CLASS A

Description: Small, abruptly widening flange, long, slender, tapering point, diamond-shaped in cross section, chipping medium (fig. 42, *a*). Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, lateral entry, fill.

Dimensions: Length, 3.7 cm.; width, 1.5 cm.; thickness, 0.4 cm.

Material: Obsidian.

CLASS B

Description: Sharpened, slender flake tapering gradually to a point; wedge-shaped in cross section; point sharpened by secondary chipping (fig. 42, *b*). Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, lateral entry, fill.

Dimensions: Length, 3.0 cm.; width, 0.7 cm.; thickness, 0.3 cm.

Material: Obsidian.

KNIVES

Description: Small, random, thin flakes with some secondary chipping along one edge, possibly through use; no regularity of outline (fig. 43). Total 39.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill and floor; Pithouse Kiva, fill and floor; Apache Creek Pueblo, Rooms 2, 3, 8, fill; Room 4, floor; Valley View Pueblo, Room 2, fill.

Dimensions: Length, 2.4–6.5 cm., average, 3.8 cm.; width, 1.6–4.5 cm., average, 2.6 cm.; thickness, 0.3–1.5 cm., average, 0.7 cm.

Materials: Fine-grained basalt, chert, chalcedony, jasper, quartzite.

CLASSIFICATION OF SCRAPERS

CLASS A

Description: Flake implements with percussion chipping on one surface and steep retouch along one edge, plano-convex in cross section; one specimen bi-convex in cross section and shaped on both surfaces (fig. 44). Total 21.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill and floor; Pithouse Kiva, fill; Apache Creek Pueblo, Room 2, floor; Valley View Pueblo, Room 1, fill; Room 2, floor.

Dimensions: Length, 3.1–6.7 cm., average, 5.3 cm.; width, 2.1–6.2 cm., average, 3.7 cm.; thickness, 0.8–3.0 cm., average, 1.6 cm.

CLASS B

Description: Large, rough, thick angular flakes, generally plano-convex in cross section with steep retouch (30° to 90°) along one edge (fig. 45, *b*, *d*, *f*). Total 3.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill; small pueblo, Room 2; Valley View Pueblo, Room 2, fill.

Dimensions: Length, 6.8, 7.0, 8.5 cm.; width, 4.1, 5.3, 5.7 cm.; thickness, 2.3, 2.6, 2.0 cm.

CLASS C

Description: Thick, oblong flakes, plano-convex to keel shape in cross section; retouch at one end (fig. 45, *a*, *c*, *e*). Total 3.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Length, 5.1, 5.4, 3.8 cm.; width, 3.1, 3.5, 3.0 cm.; thickness, 1.4, 2.2, 0.8 cm.

Materials: Obsidian, fine-grained basalt, quartzite, chert.

CLASSIFICATION OF CHOPPERS

CLASS A

Description: Thick, angular core implements percussion flaked on two surfaces to form a sharp cutting edge; trimmed to edge part way around; one surface trimmed or left flat for grip; small areas of weathered surface left intact in some specimens for grip (fig. 46, *b–f*). Total 5.

Occurrence: Higgins Flat Pueblo, Great Kiva, floor; Pithouse Kiva, floor; Apache Creek Pueblo, Room 3, floor; Plaza, trench.

Dimensions: Length, 9.8, 9.5, 6.1, 9.4, 9.5 cm.; width, 7.5, 6.5, 4.6, 7.7, 7.6 cm.; thickness, 4.7, 3.6, 4.3, 3.8, 6.7 cm.

CLASS B

Description: Plano-convex chopper; large, thick, angular implement, roughly semicircular in outline; percussion flaked part way around to produce sharp serrate cutting edge; portion of original weathered surface left intact for grip (fig. 46, *a*). Total 1.

Occurrence: Higgins Flat Pueblo, Pithouse Kiva, fill.

Dimensions: Length, 7.1 cm.; width, 3.5 cm.; thickness, 2.3 cm.

Materials: Glassy rhyolite, fine-grained basalt, chert.

SHELL BRACELETS

Description: Thin, curved sections of bivalve shell, wedge-shaped in cross section, one with umbo of shell perforated (fig. 47, center). Total 2.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill; Apache Creek Pueblo, Room 5, floor.

Dimensions: Length, 5.6, 3.8 cm.; width, 0.4, 0.8 cm.; thickness, 0.4, 0.3 cm.

Material: Glycymeris shell.

SHELL BEAD

Description: Circular disc bead of white shell tinged with pink, drilled hole 0.3 cm. diameter (fig. 40, left). Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Diameter, 1.2 cm.; thickness, 0.5 cm.

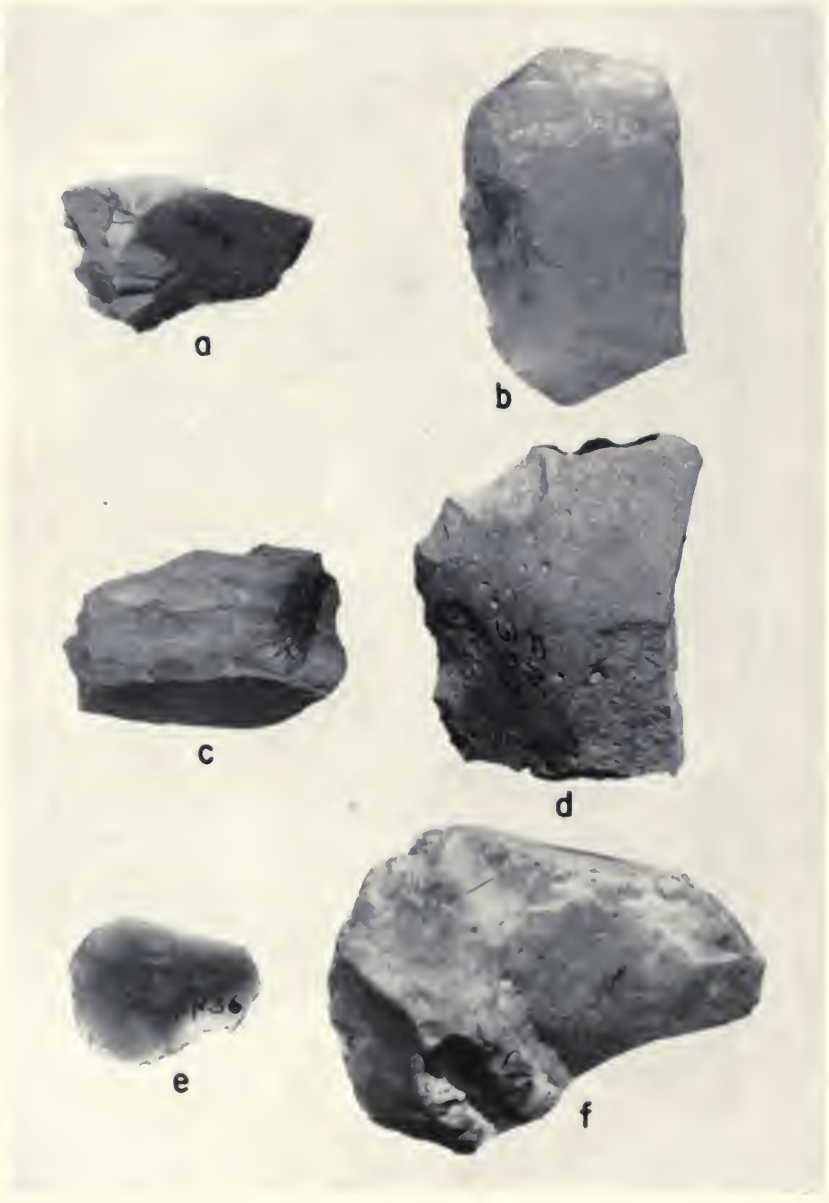

FIG. 45. Large, rough, thick scrapers (*b*, *d*, *f*) and end scrapers (*a*, *c*, *e*). Length of *f*, 8.5 cm.

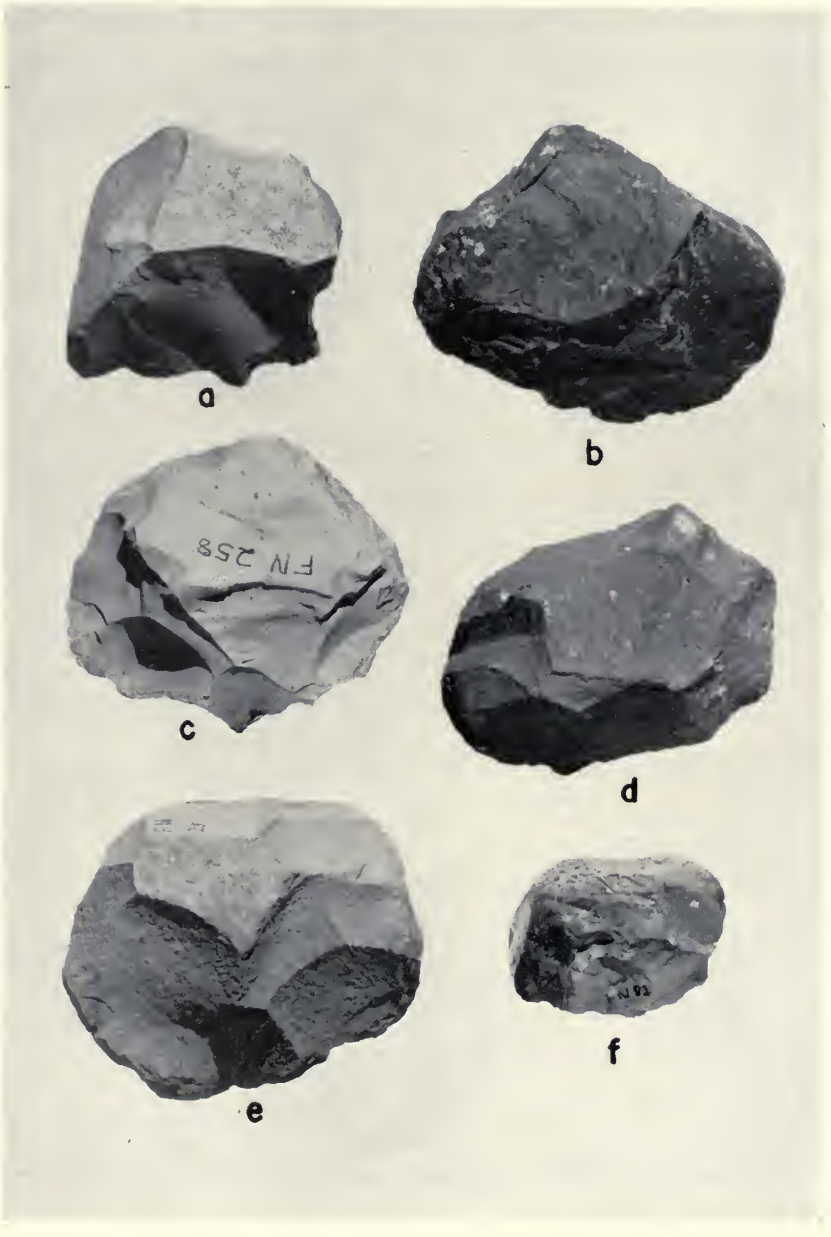

FIG. 46. Choppers (uniface, *a;* biface, *b–f*). Length of *f*, 6.1 cm.

BONE TUBE

Description: Short section of split hollow bone, ends cut (fig. 47, lower left). Total 1.

Occurrence: Apache Creek Pueblo, Room 1, fill.

Dimensions: Diameter, 1.7 cm.; length, 3.1 cm.

FIG. 47. Shell bracelets, bone tube and gaming piece. Length of lower right specimen, 2.7 cm.

GAMING PIECE

Description: Elliptical slip of bone, concavo-convex in cross section; incised line from end to end on concave surface, other surfaces and edges polished smooth (fig. 47, lower right).

Occurrence: Apache Creek Pueblo, Room 3, fill below roof on mealing bin.

Dimensions: Length, 2.7 cm.; width, 1.0 cm.; thickness, 0.2 cm.

BONE AWLS

The majority of the bone awls were made of deer leg bones, either ulnas or split metatarsals. The condyles of these bones made good handles, and the natural grooves formed easy lines for cleavage. Some of the points are fine and delicate; one of them is shouldered and seems to be adapted for making a hole in some tough material.

The awls made of ulnas with the head of the bone intact constitute the largest group of any one type. Although this type appears in earlier phases, apparently it is the most popular type during the Tularosa Phase. This corroborates the trend in popularity observed in the awls from the dwelling rooms of Higgins Flat Pueblo (Martin, Rinaldo, *et al.*, 1956).

CLASSIFICATION OF BONE AWLS

CLASS A

Description: Ulna type, head of bone intact, shaft ground and polished to a sharp point (fig. 48, *g–i*, *k*, *n*). Total 10.

Occurrence: Higgins Flat Pueblo, Room 2, small pueblo, fill; Apache Creek Pueblo, Rooms 1, 2, 3, 8, floor; Rooms 2, 3, fill; Valley View Pueblo, Room 2, fill.

Dimensions: Length, 8.1–14.9 cm., average, 12.1 cm.

Material: Deer (*Odocoileus* sp.) ulnas.

CLASS B

Description: Made from metatarsal condyle and shaft not split; grooved just below condyle; distal end of shaft ground and polished to a thick point (fig. 48, *c*). Total 1.

Occurrence: Apache Creek Pueblo, Room 8, fill.

Dimensions: Length, 19.9 cm.

Material: Deer (*Odocoileus* sp.) metatarsal.

CLASS C

Description: Head of bone unworked except by original splitting, other end ground and polished to a point; made from leg bone split in half (fig. 48, *e*). Total 1.

Occurrence: Apache Creek Pueblo, Room 2, fill.

Dimensions: Length, 11.1 cm.

Material: Deer (*Odocoileus* sp.) metatarsal.

CLASS D

Description: Head of bone ground down after splitting in half, other end ground and polished to a point (fig. 48, *j*). Total 1.

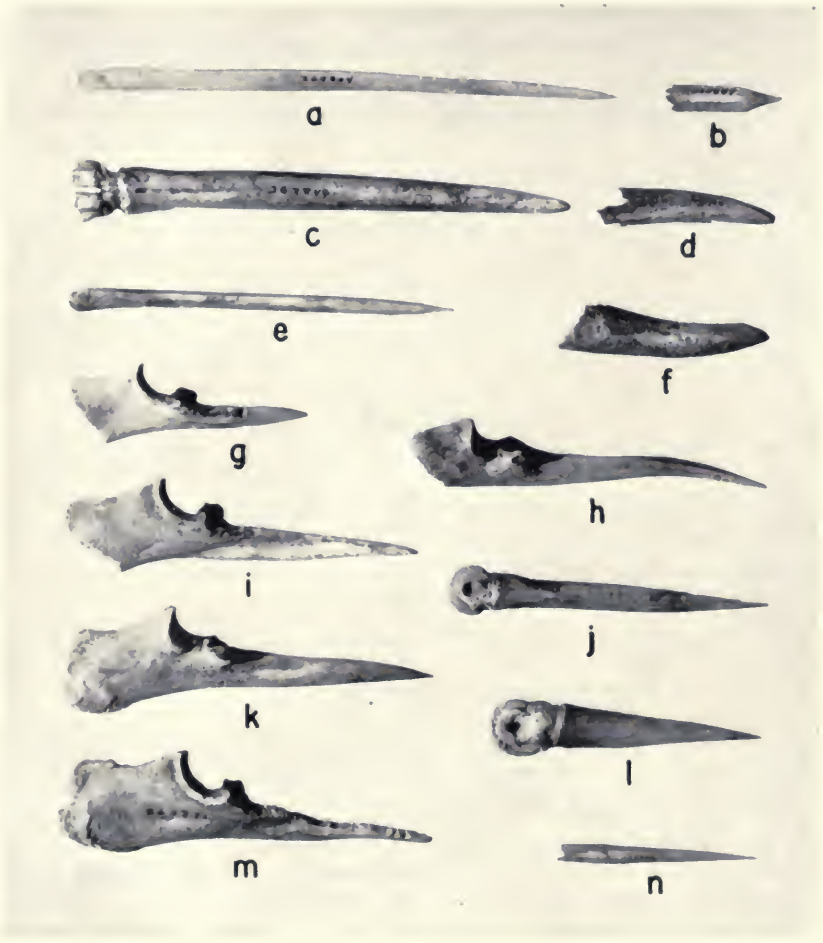

FIG. 48. Bone awls (*a–c*, *e*, *g–n*); antler flakers (*d*, *f*). Length of *n*, 8.2 cm.

Occurrence: Apache Creek Pueblo, Room 2, fill.
Dimensions: Length, 13.1 cm.

CLASS E

Description: Made of quartered split long bone, one specimen with broad end worked to square spatula shape, the other end ground and polished to a point; possibly unfinished bodkin (fig. 48, *l*). Total 2.
Occurrence: Apache Creek Pueblo, Room 4, floor; Room 5, fill.
Dimensions: Length, 15.6, 21.7 cm.

CLASS F

Description: Made from splinters of long bone; one specimen with one end squared off (fig. 48, *a*). Total 4.

Occurrence: Apache Creek Pueblo, Room 3, roof; Room 8, floor; Plaza, fill.

Dimensions: Length, 5.4, 8.2, 8.5, 6.8 cm.

CLASS G

Description: Points or tips of bone awls; one specimen shouldered; all fragments (fig. 48, *b*). Total 3.

Occurrence: Higgins Flat Pueblo, Great Kiva, floor; Apache Creek Pueblo, Room 3, floor; Valley View Pueblo, Room 2, floor.

ANTLER FLAKERS

Description: Portion of antler tine with beveled and scored tip (fig. 48, *d*, *f*). Total 3.

Occurrence: Higgins Flat Pueblo, Pithouse Kiva, fill; Apache Creek Pueblo, Rooms 3, 4, fill.

Dimensions: Length, 14.6, 7.1, 19.3 cm.

Material: Deer (*Odocoileus*) antler.

BAKED CLAY OBJECTS

The baked clay objects include worked sherds of several forms and a single animal effigy. The worked sherds include plain discs (gambling counters?), perforated discs (spindle whorls), a large oval scoop, some smaller sherds in the shape of a sub-rectangle, and some worked rim sherds that are thought to be pottery working tools. One aspect of the group seems possibly significant; that is the occurrence of worked sherds made from textured wares, whereas previously the worked sherds found have been made only of plain wares or of painted decorated types. Worked sherds made from textured wares are also rare in other areas of the Southwest; for example, San Francisco Mountain Gray Ware was found to be the most common material for the objects in the Big Hawk Valley sites (Smith, 1952b, p. 151).

The worked rim sherds bear at least a superficial resemblance to some Pueblo pottery making tools (Guthe, 1925, pl. 11). This is of course merely a guess as to their function, although the interior of the pottery where it has not been finished by polishing does sometimes show scraping marks—gouges and scratches.

The single animal effigy is typical of those found in this area. It would be impossible to identify it further than as a quadruped. It is bruised and

broken, but lacks the hole found on so many (Nesbitt, 1938, p. 100) extending through the body.

CLASSIFICATION OF WORKED SHERDS

CLASS A

Description: Pottery discs with edges ground smooth and holes drilled through center; holes drilled through from both sides (fig. 49, *d*, *g*, *i*). Total 3.

Occurrence: Higgins Flat Pueblo, Pithouse Kiva, fill.

Dimensions: Diameters, 5.4, 3.8, 3.4 cm.; thickness, 0.4, 0.3, 0.4 cm.

Materials: Alma Plain, Reserve Smudged, Mimbres Black-on-White.

CLASS B

Description: Pottery discs with edges ground smooth (fig. 49, *c*, *e*). Total 4.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill; Apache Creek Pueblo, Room 2, floor, Room 6, fill.

Dimensions: Diameter, 2.7, 6.4, 3.5 cm., fragment; thickness, 0.5, 0.7, 0.7, 0.6 cm.

Materials: Alma Plain, Reserve Smudged, Reserve Indented Corrugated.

CLASS C

Description: Triangular in outline, with edges ground smooth (fig. 49, *j*). Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, floor.

Dimensions: Length, 5.8 cm.; width, 4.2 cm.; thickness, 0.6 cm.

Material: Reserve Smudged.

CLASS D

Description: Sub-rectangular with edges ground smooth (figs. 49, *b*, *h*, *l*; 50, lower). Total 5.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill; Pithouse Kiva, fill; Apache Creek Pueblo, Room 1, fill; Room 8, floor.

Dimensions: Length, 11.0, 6.0, 5.2, 4.6, 4.5 cm.; width, 10.6, 5.7, 4.4, 4.2, 4.3 cm.; thickness, 0.6, 0.7, 0.8, 0.7, 0.7 cm.

Materials: Tularosa Black-on-White, Reserve Plain Corrugated, Reserve Smudged, Reserve Indented Corrugated, Smudged Interior variant.

CLASS E

Description: Oblong worked rims with edges ground smooth (fig. 49, *a*, *k*). Total 2.

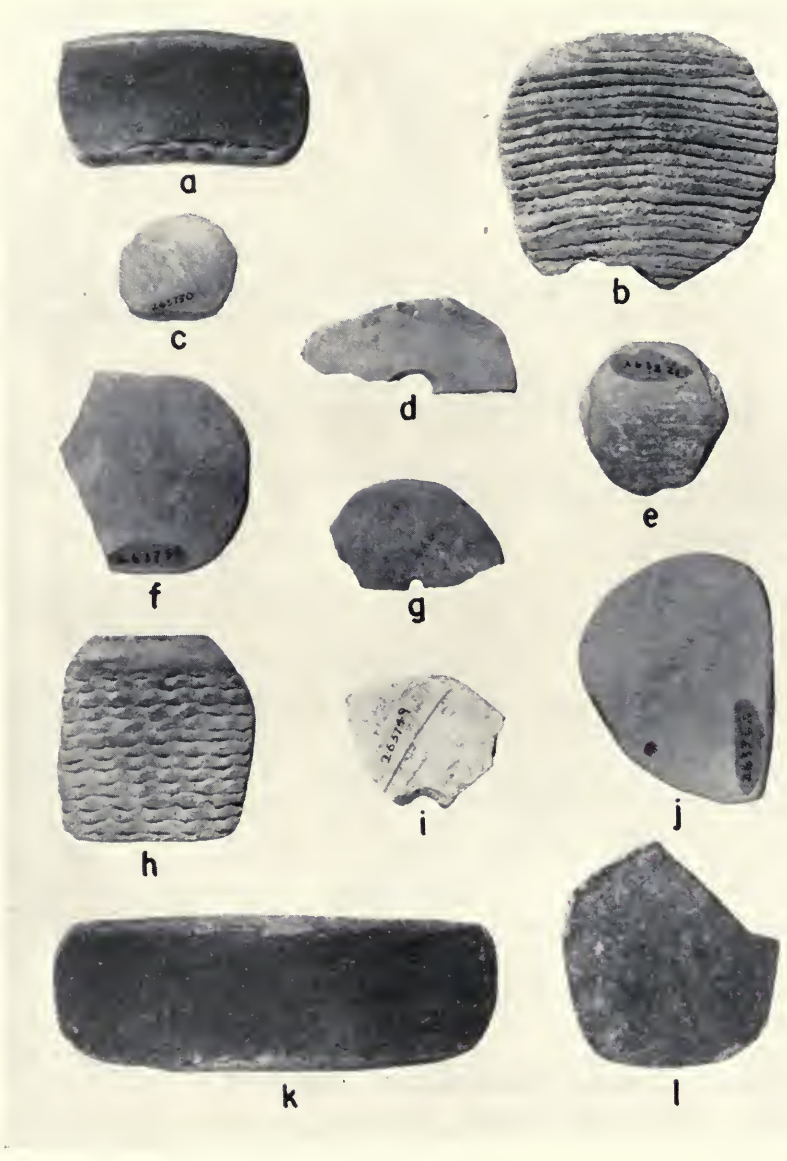

FIG. 49. Miscellaneous worked sherds. Length of lower right specimen, 5.2 cm.

Occurrence: Apache Creek Pueblo, Room 8, floor.

Dimensions: Length, 9.7, 5.6 cm.; width, 3.5, 3.0 cm.; thickness, 0.8, 0.6 cm.

Material: Reserve Indented Corrugated, Smudged Interior variant.

FIG. 50. Worked sherd and animal effigy. Length of lower specimen, 11.0 cm.

FIG. 51. Incised stone. Length, 33.5 cm.

CLASS F

Description: Miscellaneous fragments, mostly with one or more curved edges. Total 5.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill and floor; Pithouse Kiva, fill; Apache Creek Pueblo, Room 3, fill.

Dimensions: Length, 4.0, 3.1, 4.0, 4.3, 4.2 cm.; thickness, 0.5, 0.5, 0.5, 0.6, 0.7 cm.

Materials: Reserve Black-on-White, Chaco Black-on-White, Alma Plain, Indeterminate Black-on-White (no design showing), Cibola White Ware.

ANIMAL EFFIGY

Description: Crudely modeled quadruped figure, peg-like legs, head and tail broken off (fig. 50, upper). Total 1.

Occurrence: Higgins Flat Pueblo, Great Kiva, fill.

Dimensions: Length, 6.0 cm.; width, 3.0 cm.; thickness, 2.8 cm.

INCISED STONE

Description: Triangular stone, wedge-shaped in cross section, the two main triangular planes joined at their bases; one smooth surface incised with concentric triangles (fig. 51).

Occurrence: Apache Creek Pueblo, Room 2, fill.

Dimensions: Length, 33.5 cm.; width, 16.4 cm.; thickness, 14.5 cm.

UNWORKED STONE

Lumps of stone possibly for pigments; red, yellow, blue, no facets.

Apache Creek Pueblo: Room 3, floor, malachite; Room 6, fill, hematite; Room 1, fill, hematite.

Higgins Flat Pueblo: Great Kiva, floor, limonite; Great Kiva, south posthole, azurite; Pithouse Kiva, roof, limonite.

III. Pottery of the Reserve Area

By Eloise Richards Barter

Excavations during the 1954 season were primarily an effort to establish the latest prehistoric Mogollon occupation in the Reserve area. We found no sites as late as two previously reported: Cosper Cliff-Dwelling (Martin, Rinaldo, and Bluhm, 1954); and Higgins Flat Pueblo (Martin, Rinaldo, *et al.*, 1956). It was possible, however, to expand our knowledge of the middle range of the Tularosa Phase, and to establish more clearly the ceramic differentiation between the Reserve and Tularosa Phases in the Reserve area.

About 15,000 sherds were recovered during the season and were excavated according to the procedure outlined previously. Sherds were washed, classified, and counted in the field. From these counts, the percentage of each type in a particular excavation unit was calculated relative to the total number of sherds recovered from that unit (Tables 1–3). Both fill and floor levels were treated in this manner. The percentages for each floor level were then plotted on graph paper and arranged serially according to pottery popularity trends outlined by stratigraphy. This should graphically represent the approximate sequence of occupation and abandonment of floor levels. As the seriations agree in almost all instances with the stratigraphic observations and building sequences within a particular site, the method is believed valid.

The same basic method (fig. 52) is used to compare trends in pottery assemblages (and, by extension, the age) of two or more sites (Martin and Rinaldo, 1940; Martin, Rinaldo, and Antevs, 1949).

HIGGINS FLAT PUEBLO

A Great Kiva and a Pithouse Kiva were excavated near Higgins Flat Pueblo (see Chapter I). These can not be regarded as isolated units, but must be considered in their relationship to the excavated portion of Higgins Flat Pueblo (Martin, Rinaldo, *et al.*, 1956).

The Great Kiva was divided by architectural remodeling into two separate units, an earlier and a later structure. The stratigraphy and the position of the postholes indicated that one floor had been used both be-

fore and after the alterations (p. 13). The pottery from the floor would therefore be a mixture from the earlier and later structures. To obtain the maximum information from the pottery, a part of the structure that had not been re-used had to be isolated.

The lower ramp, the lower firepit, and the portion of the floor behind the west wall were all filled during the remodeling. Sherds in these areas could not be later than the architectural alterations in the Great Kiva. These are indicated on the seriation as "earlier structure."

A small number of sherds were found in scraping through the floor, after it had been cleared. It seems probable that these floor contact sherds (designated on fig. 52 as "earlier structure, floor contact") had been deposited during the building and occupation of the earlier structure of the Great Kiva. In theory, these should be of about the same time, or perhaps earlier, than the sherds from the sealed areas.

The pottery types found in the earlier structure of the Great Kiva are similar to the types found in the earliest rooms at Higgins Flat Pueblo (Martin, Rinaldo, *et al.*, 1956). There is no indication that the sacred function of the Great Kiva is in any way reflected in the sherd counts.

The sherd percentages from the sealed areas and floor contact were compared with the room-floor seriation made for Higgins Flat Pueblo (see Martin, Rinaldo, *et al.*, 1956). There is a marked resemblance between pottery frequencies of the earlier structure and those of the "former rooms" of Higgins Flat Pueblo. These were part of a Reserve Phase structure that was torn down at some time prior to the building of the first Tularosa Phase rooms at Higgins Flat Pueblo (the "nuclear rooms").

We concluded, therefore, that the earliest version of the Great Kiva should be placed in the Reserve Phase. Whatever social force influenced the remodeling of Higgins Flat Pueblo may also have been active in the alterations in the Great Kiva. These two activities seem to coincide.

On the west side of the ridge on which Higgins Flat Pueblo is located there is a small pueblo. From surface indications and limited trenching, this appears to be of the Reserve Phase. The Great Kiva as well as the former rooms of Higgins Flat Pueblo may have been used by the people of the small pueblo.

The only floor level that can be considered as part of the later structure, and only the later structure, of the Great Kiva is the upper ramp. The sherds from the upper ramp are a typical assemblage of the Tularosa Phase. Again, we could ascertain no difference between the ceramic complex of Higgins Flat Pueblo and that of the Great Kiva.

The pottery percentages of the upper ramp (on fig. 52 designated as "later structure") indicate, by comparison, that it is later than the earlier structure of the Great Kiva. When compared with the sherd percentages

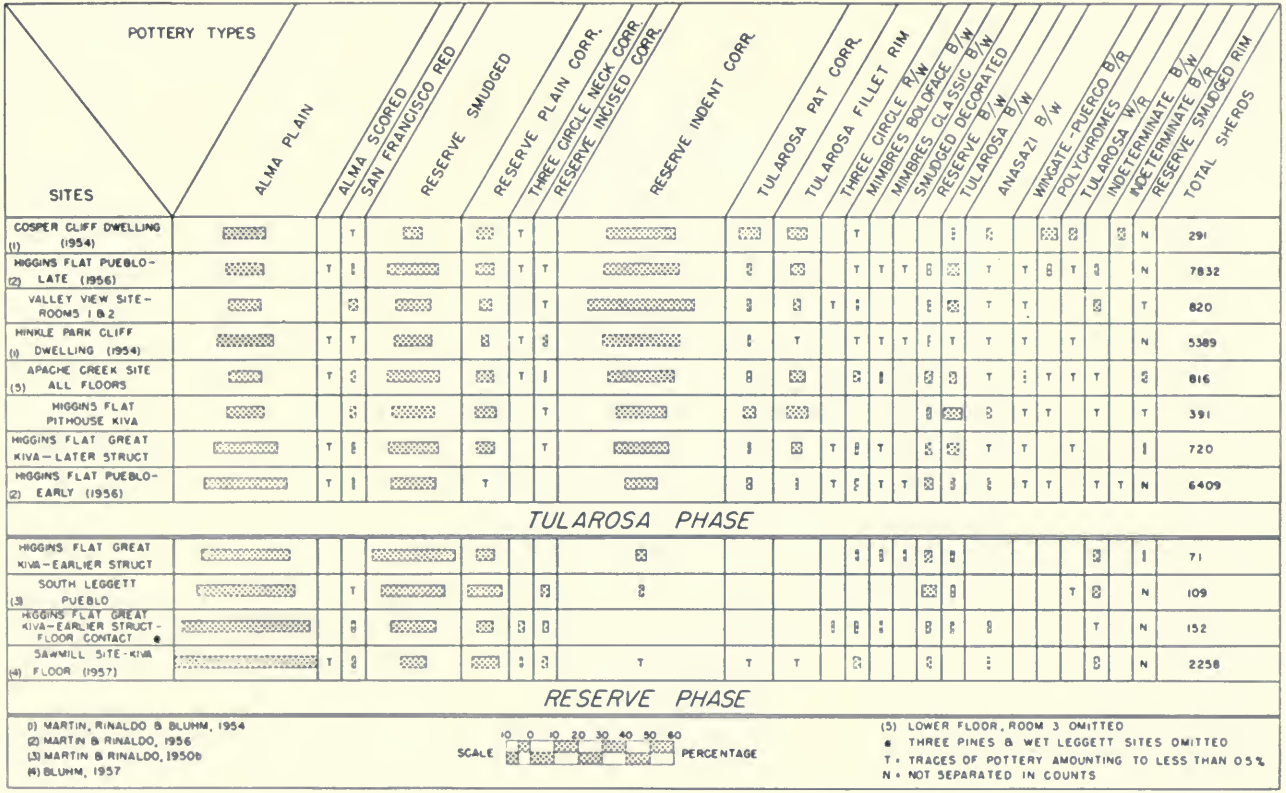

FIG. 52. Chart showing relationships of principal pottery types.

of the room-floors of Higgins Flat Pueblo, the upper ramp is found to be similar to some of the later rooms. (The upper ramp would fall between Room M, floor 1, and Room N, floor 1, in the Higgins Flat Pueblo seriation, Martin, Rinaldo, *et al.*, 1956.) The later structure of the Great Kiva can be assigned to the Tularosa Phase. It would appear that some rooms of Higgins Flat Pueblo were used after the abandonment of the Great Kiva.

The architecture of the Pithouse Kiva is a mixture of sacred and secular architectural manifestations (see p. 26). The types of pottery recovered from it are typical of the Tularosa Phase and show no sharp differentiation from either the living rooms or the later structure of the Great Kiva.

The frequencies of floor sherds from the Pithouse Kiva are very similar to those of the upper ramp of the Great Kiva and indicate an abandonment at about the same time.

Whole and Restorable Pottery

Great Kiva, Fill

1 Alma Plain miniature bowl

Great Kiva, Floor

1 Alma Plain miniature jar
1 Alma Plain miniature bowl
1 Alma Plain miniature jar, behind west wall added during alteration

These vessels were all shaped by pinching, and then roughly smoothed. They are in no way distinctive in appearance. All are from the southwest quadrant.

Pithouse Kiva, Floor, Mealing Receptacles

3 Tularosa Fillet Rim bowls
1 Reserve Plain Corrugated bowl, base only

The use here of a corrugated vessel as a receptacle in mealing bins is unique. Tularosa Fillet Rim bowls were habitually employed. Paint stones were associated with one of the Tularosa Fillet Rim bowls (see p. 60).

APACHE CREEK SITE

Nine rooms at Apache Creek Site were excavated and the plaza was outlined (Chapter I). The pottery counts for the rooms are given in Tables 2 and 3. Data on the plaza trench are omitted as there are too few sherds to form a base for reliable conclusions.

Room 3 was the only room that had two floors. When the frequencies of the pottery types were plotted, it became evident that the floor levels excavated at Apache Creek Site represented a short occupation. The seria-

tion by room indicated that Rooms 8, 1, and 6 were somewhat later than the others. (Probable order of abandonment: 3, 3A, 5, 2, 8, 1, 6.) The trends were so slight that all floor levels were combined for the graph of Tularosa Phase sites (fig. 52).

The portion of Apache Creek Site excavated belonged to the middle span of the Tularosa Phase as it is now known. It was occupied at the same time as Higgins Flat Pueblo.

FIG. 53. Reserve Indented Corrugated double vessel with jar top set into bowl bottom. From fill, Room 3, Apache Creek Pueblo.

Whole and Restorable Pottery

Room 1, Floor

1 Tularosa Fillet Rim Bowl

Room 2, Floor

2 Tularosa Fillet Rim Bowls

These bowls were located in a pit (below the floor) in the southwest corner of the room.

Room 3, Fill

1 Reserve Indented Corrugated jar, smudged interior

1 Reserve Indented Corrugated jar, double vessel with jar top set into bowl bottom (fig. 53)

1 Reserve Black-on-White bowl of a ladle cut down to serve as a scoop

Room 3, Floor

Mealing bins: 3 Tularosa Fillet Rim bowls

Grouped around firepit: 5 Reserve Indented Corrugated jars, smudged interior

Over firepit: 1 Tularosa Fillet Rim bowl

In northwest quadrant of room: 1 Alma Rough bowl

Room 8, Floor

1 Tularosa Black-on-White jar with indented hand-holds (fig. 54)

The Reserve Indented Corrugated jars grouped around the firepit were probably used for cooking. This type of jar was commonly used for cooking in the Jewett Gap Site (see p. 110). Tularosa Fillet Rim bowls seem to be more frequently used for cooking purposes in the Reserve area than in the Jewett Gap Site.

Other household equipment was in place in this room. Room 8 had the same assemblage of Reserve Indented Corrugated jars and Tularosa Fillet Rim bowls around the firepit.

Room 3A, Floor

2 small Reserve Smudged bowls

1 small San Francisco Red Neck Corrugated jar

These were grouped together in the southeast corner of the room, below the upper floor. A similar jar was found with a burial in the Valley View Site.

Room 7, Fill

1 Tularosa Patterned Corrugated jar, Reserve Variant

Room 8, Floor

North of firepit: 2 Reserve Indented Corrugated jars; 2 Tularosa Fillet Rim bowls; 1 Tularosa Black-on-White jar

Northeast quadrant: 2 Reserve Indented Corrugated jars; 1 Tularosa Fillet Rim bowl; 1 Alma Plain miniature jar

Plaza Trench

1 miniature duck effigy vessel

This is the first miniature painted vessel excavated by Chicago Natural History Museum in the Reserve area. It is very similar to a larger one found at the Sawmill Site (Bluhm, 1957), and resembles a duck effigy il-

lustrated from the Starkweather Ruin (Nesbitt, 1938). All three use wavy or small crescent lines to indicate the breast feathers, while other markings are in stylized designs. Duck effigies from the Springerville area seem to have a Tularosa style design on the breast, in place of a more realistic representation of feathers. Duck effigies from the Jewett Gap Site usually

FIG. 54. Tularosa Black-on-White jar with indented hand-holds. From floor, Room 8, Apache Creek Pueblo.

have interlocking scrolls (1 to 3), or a continuation of the body design, on the breast. The breast design of crescents and wavy lines is perhaps centered in the Reserve area.

The small duck vessel from Apache Creek Site was fired and then drilled at the back of the neck. The tail is also provided with a hole, but this appears to have been punched while the clay was still damp. The painted design is worn off the vessel to a point half way up the body.

Wear on the bottom and rim of duck vessels is common in those examined from the Jewett Gap Site, and in the collections of Chicago Natural History Museum. To what use these duck effigies were put has not been determined.

VALLEY VIEW SITE

Two rooms were excavated at the Valley View Site (Chapter I). The sherd percentages from both rooms indicate that they were occupied at

about the same time. Consequently floor level counts were combined for the charting of Tularosa Phase sites.

These two rooms have been assigned to the Tularosa Phase at a time slightly later than that assigned to the excavated portion of Apache Creek Site. The lack of any polychrome sherds on the floor is not considered a particular problem, as polychromes seem to occur on only one out of four floor levels in all Tularosa Phase sites.

It is evident from red-on-brown and red-on-white sherds that there was admixture from an earlier site. Pithouse depressions noted on the same knoll as the Valley View Site may account for the early sherds found in the excavations.

Whole and Restorable Pottery

Room 1, Fill

1 Reserve Indented Corrugated jar, Smudged Interior

Room 2, Fill

1 Tularosa Fillet Rim bowl

Room 2, Floor

West of south post: 1 Alma Plain miniature bowl; 2 Reserve Indented Corrugated jars

With burial 2–1: 1 San Francisco Red, Neck Corrugated jar, small

Sunk in floor, beside vent: 1 Reserve Indented Corrugated jar

There are as yet no tree ring dates from Tularosa Phase sites of the Reserve Area. Dating is based upon intrusive pottery and trends in the popularity of local types.

The ceramic popularity trends established for the Reserve Area seem to be the best method of placing sites in relative chronological position. The chart (fig. 52) is a seriation based on pottery of all sites Chicago Natural History Museum has excavated that have been assigned to the Tularosa Phase, plus a few late Reserve Phase sites.

Hinkle Park and Cosper Cliff-Dwellings and South Leggett Pueblo are thought to have been occupied but briefly. Each is represented by a single strip in the seriation (Martin, Rinaldo, and Bluhm, 1954).

For convenience of presentation, the room-floor seriation of pottery frequencies for Higgins Flat Pueblo was divided into two sections. This division of a continuously occupied pueblo was made to show the relationship of Higgins Flat Pueblo to the Great Kiva, Pithouse Kiva, and other Tularosa Phase sites, without repeating the complete seriation (Martin, Rinaldo, *et al.*, 1956).

The Pithouse Kiva and the Great Kiva seemed best to fit into the Higgins Flat Pueblo seriation between Room M, floor 1, and Room N, floor 1. A somewhat arbitrary division was made at that point. Therefore, "Higgins Flat Pueblo—Early" on figure 52 is a composite average of sherd frequencies in Room M, floor 1 and all other floors shown as earlier in the Higgins Flat Pueblo seriation. Likewise, "Higgins Flat Pueblo —Late" is Room N, floor 1 and all other floor levels considered as later in the seriation.

The sherd counts from the Sawmill Site, Great Kiva, are taken from a recently published report (Bluhm, 1957). The Great Kiva is a large, rectangular subterranean structure with an inclined ramp entrance, similar architecturally to the one at Higgins Flat Pueblo.

We feel that the position of the sites in chronological sequence on figure 52 is correct. The difficulty arises in assigning dates.

Trade sherds in the Tularosa Phase sites are not numerous. It is felt that they indicate a range of dates for the entire phase from around A.D. 1100 to A.D. 1250. The initial date is based primarily upon the presence of St. Johns Polychrome, the end date upon the presence of one sherd each of Tusayan and Fourmile Polychromes.

CERAMIC FEATURES OF THE TULAROSA PHASE

Sufficient ruins have now been excavated to allow synthesis of the ceramic assemblage that constitutes the Tularosa Phase of the Reserve Area.

From the sherd counts in this and preceding publications, and from trends shown throughout the Reserve and Tularosa Phases, we have derived the following ceramic characteristics of the Tularosa Phase as it is known in the Reserve area.

Guide Types

Five types (Tularosa Black-on-White, Tularosa White-on-Red, St. Johns Polychrome, Tularosa Fillet Rim, and Tularosa Patterned Corrugated) are considered guide types to the Tularosa Phase and are present consistently for the first time during that phase.

Tularosa Black-on-White: Tularosa Black-on-White is present throughout the phase, but does not completely replace the ancestral Reserve Black-on-White until late in the Tularosa Phase.

Tularosa White-on-Red: Tularosa White-on-Red appears to be characteristic of the later part of the phase, although occasional sherds are found in early Tularosa Phase sites. The similarity of exterior designs on St. Johns Polychrome and Tularosa White-on-Red suggests influence of one type on the other. Both probably originated west of the Reserve area.

St. Johns Polychrome: St. Johns Polychrome appears for the first time during the Tularosa Phase. We suspect that some of the pieces may have been locally made. Other polychromes and all black-on-reds are considered to be trade wares.

The late variant of St. Johns Polychrome, Springerville Polychrome, is also found. Only two of the three variations of Springerville Polychrome have been uncovered in the Reserve area: sub-glaze paint, and the addition of white paint to the interior design. The other variation, addition of black paint to the exterior design, has not been found.

A few pieces of Houck and Querino Polychromes have been identified. No difference can be found between the time span of Houck Polychrome and St. Johns Polychrome, yet there seems to be a geographical differentiation in their spread. Houck Polychrome is reported in quantity only from Apache Creek Site and Valley View Site. One sherd was found in the trenching at Higgins Flat Pueblo. Three sherds were reported from Starkweather Ruin (Nesbitt, 1938). Houck Polychrome can be considered as occurring only in the eastern part of the Reserve Area, centering particularly in the San Francisco River Valley.

The polychrome types do not replace black-on-red types except in the latest site now known from this area—Cosper Cliff-Dwelling. In most cases, black-on-reds and polychromes do not occur together on floor levels. This is apparently an expression of taste on the part of the occupants of the rooms, as there is stratigraphic evidence that there is no temporal difference. On an average, polychromes occur on 25 per cent of the floor levels.

It will be noted that three black-on-red types are listed in the pottery counts: Wingate Black-on-Red, Tularosa-style Black-on-Red, and Puerco Black-on-Red. The Tularosa-style Black-on-Red is variously called Wingate Black-on-Red, St. Johns Black-on-Red, Tularosa Black-on-Red, and perhaps North Plains Black-on-Red. It does not conform to the description of Wingate Black-on-Red. Research in the Springerville area might clarify the black-on-red pottery problem.

Tularosa Fillet Rim: Tularosa Fillet Rim replaces Reserve Fillet Rim and becomes a prominent type early in the phase. It continues in popularity throughout the span of the phase.

Tularosa Patterned Corrugated: Although a few pieces are known from Reserve Phase sites, Tularosa Patterned Corrugated first becomes common during the Tularosa Phase. Two variants are recognized. Tularosa Patterned Corrugated, with indented geometric patterns against a plain corrugated background, is primarily limited to Tularosa Phase sites. Tularosa Patterned Corrugated Reserve Variant, with alternate plain and indented corrugated bands, is found in late Reserve Phase sites, and is common in the Tularosa Phase. Jar forms are the most common in both

variants, although an occasional bowl (always with a smudged interior) is known.

It is always a matter of individual preference when assigning a phase classification on the basis of pottery to a transitional site. We consider no *site* to be of the Tularosa Phase unless, among other traits, all of the pottery types listed above (Tularosa Patterned Corrugated, Tularosa Fillet Rim, Tularosa Black-on-White, Tularosa White-on-Red, and St. Johns Polychrome) are present. Naturally, all these types do not come into existence at precisely the same instant. Tularosa Patterned Corrugated and Tularosa Fillet Rim seem to be the earliest. Tularosa Black-on-White appears before St. Johns Polychrome and Tularosa White-on-Red.

We know, though, that new types do not occur in sufficient quantity in the early parts of the phase to make it possible to place single rooms by guide types alone. To place an individual room within a site in chronological position, or to compare the temporal range of two sites, changes in percentages of occurrence of types that may have been well established in an earlier period are used. This is preferred to mere presence-absence criteria in the guide types.

Trends During the Tularosa Phase

The following trends in pottery popularity seem valid for the Tularosa Phase in the Reserve Area:

Most important, perhaps, Reserve Indented Corrugated increases in popularity as unindented types decrease. Some slight tendency for Reserve Indented Corrugated to decrease is noted at the end of the phase as it is now known. This coincides with an increase in Tularosa Patterned Corrugated and Tularosa Fillet Rim. All of the types utilizing indentation as a technique post-date the introduction of Reserve Black-on-White and appear to be the adaptation of the Anasazi technique of indentation to a Mogollon brown-ware tradition.

Alma Plain decreases steadily in popularity throughout the phases. A mentioned elsewhere (Martin, Rinaldo, *et al.*, 1956) it is suspected that many of the Alma Plain sherds may have been from the plain bases of neck corrugated jars.

Reserve Incised Corrugated, while still present, is a minor textured type. Its popularity declines suddenly at the beginning of the Tularosa Phase. This coincides with the increase in popularity of types with the indented technique.

San Francisco Red is present throughout the phase, in small but constant quantity. Many of these sherds may be from Red Neck-Corrugated vessels. Red Indented Corrugated sherds are found in sites of the Tularosa Phase in the Reserve area.

Reserve Smudged rim sherds are present but are not frequent. Occasional whole bowls have been found. Reserve Smudged does not appear to be a primary culinary ware during the Tularosa Phase in the Reserve Area. Body sherds from Tularosa Fillet Rim and Reserve Smudged bowls are indistinguishable. As 1954 was the first season that Reserve Smudged rim sherds were counted separately, there is no perceptible trend that can be traced throughout all the sites.

Smudging increases on the interiors of all plain and textured types.

There is a tendency for the width of corrugations and indentations to decrease.

The amount of experimentation seems to decrease. The Mogollones during the Reserve Phase were attempting to produce new ways of texturing their pottery. Odd and ephemeral "types" were common. During the Tularosa Phase the types became stabilized.

Starkweather Smudged Decorated is still found but has become a minor decorated type.

In all sites of the Tularosa Phase there are a few sherds considered to be intrusive from earlier times. Red Mesa Black-on-White and Kiatuthlanna Black-on-White are the most frequent. Both these types also occur in Three Circle Phase and in the Reserve Phase sites.

Mimbres Classic and Mimbres Bold Face Black-on-White continue to be present in a small but constant quantity throughout most of the span of the Tularosa Phase. These types were probably of local manufacture, but one should not discount the possibility that they represent trade ware from the south.

The ceramics of the Tularosa Phase are characterized by the intermixture of Anasazi and Mogollon tradition and techniques. One finds a Mogollon brown corrugated culinary ware modified by Anasazi indentation; a Mimbres black-on-white ware associated with an Anasazi-inspired black-on-white ware; and an indigenous white-on-red ware associated with an Anasazi-inspired black-on-red ware. This intermixture represents the culmination of a pattern established in the Reserve Phase.

ALPHABETICAL LIST OF POTTERY TYPES AND REFERENCES TO THEIR DESCRIPTIONS

Alma Incised (Haury, 1936b, p. 40).

Alma Incised, Smudged Interior; variant of Alma Incised with polished black smudged interior.

Alma Neck Banded (Haury, 1936b, p. 35).

Alma Plain (Haury, 1936b, p. 32; Martin and Rinaldo, 1947, pp. 362–368).

Alma Punched (Haury, 1936b, p. 39).

Alma Rough (Martin and Rinaldo, 1940, pp. 78–80, and 1947, pp. 362–368; Martin, 1943, p. 238).

Alma Scored (Haury, 1936b, p. 38; Martin and Rinaldo, 1950a, p. 359).

Alma Scored, Smudged Interior; variant of Alma Scored with polished black smudged interior.

Alma variants; includes miscellaneous sherds of Alma Knobby, fragments of coiled miniature vessels with coils still evident on inner surface, etc.

Chaco Canyon Pottery—"Chacoan" Black-on-White (Judd, 1954, pp. 174–238).

Houck Polychrome (Roberts, 1932, pp. 111–112).

Indeterminate Black-on-White; no design showing, white.

Indeterminate Black-on-Red; small red sherds, types unidentified.

Indeterminate Red-on-Brown; small fragments, unidentified as to type.

Kana-a Gray (Colton and Hargrave, 1937, pp. 195–196).

Kiatuthlanna Black-on-White (Roberts, 1931, pp. 130–149; Gladwin, 1945, pp. 41–42).

Klagetoh Black-on-White (Colton and Hargrave, 1937, pp. 243–244).

Mimbres Bold Face Black-on-White (Cosgrove, 1932, p. 76).

Mimbres Classic Black-on-White (Cosgrove, 1932, pp. 72–75).

Mogollon Red-on-Brown (Haury, 1936b, pp. 10–17).

Puereo Black-on-White (Gladwin, 1931, pp. 24–26; Martin and Willis, 1940, pls. 70–73).

Puereo Black-on-Red (Martin and Willis, 1940, pl. 74).

Querino Polychrome (Roberts, 1932, p. 111; Colton and Hargrave, 1937, p. 122).

Red Indented Corrugated; variety of Reserve Indented Corrugated?

Red Indented Corrugated, Smudged Interior; variety of Reserve Indented Corrugated?

Red Plain Corrugated; possibly a variety of Reserve Plain Corrugated.

Red Mesa Black-on-White (Gladwin, 1945, pp. 56–57; Martin and Willis, 1940, pls. 66–67).

Reserve Black-on-White (Nesbitt, 1938, p. 138; Martin and Rinaldo, 1950b, pp. 502–519).

Reserve Incised Corrugated (Rinaldo and Bluhm, 1956, pp. 164–167).

Reserve Incised Corrugated, Smudged Interior (Rinaldo and Bluhm, 1956, pp. 167–168).

Reserve Incised Corrugated with Plain and Indented Corrugated; variant of Reserve Incised Corrugated.

Reserve Indented Corrugated (Gladwin, 1934, p. 18; Martin and Rinaldo, 1950b, pp. 501, 530; Rinaldo and Bluhm, 1956, pp. 159–160).

Reserve Indented Corrugated, Smudged Interior (Rinaldo and Bluhm, 1956, pp. 159–161).

Reserve Plain Corrugated (Rinaldo and Bluhm, 1956, pp. 155–157).

Reserve Plain Corrugated, Smudged Interior (Rinaldo and Bluhm, 1956, pp. 157–158).

Reserve Plain Corrugated, Tularosa Variant (see Reserve Plain Corrugated, Rinaldo and Bluhm, 1956, pp. 155–157).

Reserve Punched Corrugated (Rinaldo and Bluhm, 1956, pp. 162–164).

Reserve Punched Corrugated, Smudged Interior; variant of Reserve Punched Corrugated, with polished black smudged interior.

Reserve Smudged (Martin, Rinaldo, and Antevs, 1949, pp. 187–188; Martin and Rinaldo, 1950a, pp. 359–360; 1950b, pp. 500, 534; Nesbitt, 1938, p. 139, under Reserve Plain ware).

Starkweather Smudged Decorated (Martin, Rinaldo, and Antevs, 1949, p. 188; Martin and Rinaldo, 1950b, pp. 507, 524; Martin, Rinaldo, *et al.*, 1952, p. 62; Rinaldo and Bluhm, 1956, pp. 171–173).

St. Johns Polychrome (Gladwin, 1931, pp. 36–40; Martin and Willis, 1940, pls. 97–101).

San Francisco Red, Saliz Variety (Haury, 1936b, pp. 28–31; Martin, 1943, p. 240; Martin and Rinaldo, 1940, pp. 80–81; 1947, pp. 364–368).

San Francisco Red, Smudged Interior (4 sherds); variety of San Francisco Red?

Springerville Polychrome (Danson, 1954, revised MS.).

Three Circle Neck Corrugated (Haury, 1936b, p. 36; Martin, Rinaldo, *et al.*, 1952, pp. 60, 80).

Three Circle Red-on-White (Haury, 1936b, pp. 18–21; Martin and Rinaldo, 1950a, pp. 362–369; Nesbitt, 1938, p. 137).

Tularosa Black-on-White (Gladwin, 1931, pp. 32–35; Hawley, 1936, pp. 46–47; Kidder, 1924, p. 98; Nesbitt, 1938, p. 139; Rinaldo and Bluhm, 1956, pp. 177–184).

Tularosa Black-on-White, sub-glaze; variant of Tularosa Black-on-White with sub-glaze paint.

Tularosa Fillet Rim (Gladwin, 1934, p. 18; Kidder, 1924, p. 98; Martin, Rinaldo, *et al.*, 1952, p. 65).

Tularosa Patterned Corrugated (Rinaldo and Bluhm, 1956, p. 169).

Tularosa Patterned Corrugated, Smudged Interior (Rinaldo and Bluhm, 1956, pp. 169–171).

Tularosa Patterned Corrugated, Reserve Variant (see Tularosa Patterned Corrugated, Rinaldo and Bluhm, 1956, p. 169).

Tularosa Patterned Corrugated, Reserve Variant, Smudged Interior (Rinaldo and Bluhm, 1956, p. 169).

Tularosa White-on-Red, formerly Reserve Polychrome (Nesbitt, 1938, p. 139; Wendorf, 1950, p. 122; Rinaldo and Bluhm, 1956, pp. 173, 177).

Wingate Black-on-Red (Gladwin, 1931, pp. 29–31; Martin and Willis, 1940, pls. 89–96; Gladwin, 1945, pp. 71–73).

White Mound Black-on-White (Gladwin, 1945, pp. 22–23).

TABLE 1.—POTTERY ANALYSIS, HIGGINS FLAT PUEBLO

PROVENIENCES / POTTERY TYPES	HIGGINS FLAT PUEBLO								
	GREAT KIVA						PITHOUSE KIVA		
	EARLIER STRUCTURE		LATER STRUCTURE						
	FLOOR CONTACT	RAMP, FIREPIT REAR WALL	FILL	FLOOR	PITS AND FEATURES	UPPER RAMP ENTRANCE	FILL	ROOF SURFACE	FLOOR
	%	%	%	%	%	%	%	%	%
ALMA PLAIN	53.9	36.8	37.1	36.5	48.2	26.5	33.2	29.5	15.6
ALMA PLAIN (VARIANT)		1.4							
ALMA ROUGH			0.3			0.7			0.3
SAN FRANCISCO RED	2.0		1.9	1.9	1.6	1.0	2.2	2.3	1.8
SAN FRANCISCO RED, SMUDGED INT.			0.3			0.3	0.4	0.7	0.8
RESERVE SMUDGED BODY	19.6	35.2	19.1	26.4	20.2	20.8	21.1	21.2	17.7
RESERVE SMUDGED RIM	3.3	1.4	1.7	2.9	0.8	1.1	1.8	1.6	0.5
RESERVE BLACK-ON-WHITE	2.0	2.8	2.5	4.9	6.6	2.4	1.8	1.0	1.5
STARKWEATHER SMUDGED DECORATED		1.4	0.4	0.2	0.5				
ST. JOHNS POLYCHROME			0.1				0.3		0.3
THREE CIRCLE RED-ON-WHITE	1.3		0.1			0.3			
TULAROSA BLACK-ON-WHITE	1.3	1.4	2.8	1.0	0.8	4.7	2.2	3.6	8.2
TULAROSA B/W SUB-GLAZE									1.0
TULAROSA WHITE-ON-RED			0.2			0.1	0.1		
INDENTED RED-ON-BROWN									0.3
MOGOLLON RED-ON-BROWN			0.1	0.3					
KIATUTHLANNA BLACK-ON-WHITE	0.7		0.5	2.4	1.1	0.4	0.6	1.3	0.8
MIMBRES BOLD FACE BLACK-ON-WHITE	1.3	1.4	1.6	1.5	2.7	1.0	0.9	1.6	
MIMBRES CLASSIC BLACK-ON-WHITE	0.7	1.4	0.1	0.5	0.5	0.4	0.1		
PUERCO BLACK-ON-WHITE	0.7		0.1	0.3				0.7	
RED MESA BLACK-ON-WHITE			0.1	0.8	0.5		0.4	0.3	
WINGATE BLACK-ON-RED			0.1		0.3	0.3	0.6	1.6	0.3
INDETERMINATE BLACK-ON-WHITE	0.7	2.8	1.9	2.5	3.7	2.1	2.1	1.0	3.8
PUERCO BLACK-ON-RED			0.1	0.3					
"CHACOAN" BLACK-ON-WHITE			0.1	0.7			0.3	0.3	0.3
HOUCK POLYCHROME							0.3		
KANA-A GRAY				0.2					
ALMA INCISED			0.4	0.2	0.3	0.3			
ALMA NECK BANDED			0.4	0.7	0.3	0.6	0.1		0.3
ALMA PUNCHED	0.7		0.1						
ALMA SCORED			0.4			0.3	0.1		
THREE CIRCLE NECK CORRUGATED	2.6		0.5	2.9	0.3		1.0	1.3	
RESERVE INCISED CORRUGATED	2.6		0.6	0.7	1.0	0.3	0.3	0.3	0.5
TULAROSA PATTERNED CORRUGATED			0.7	0.2		0.3	0.7	1.3	3.6
TULAROSA PATTERNED CORR. S.I.			0.2			0.1	0.4		0.3
TULAROSA PATT CORR. RESERVE VAR.			0.8	0.7		1.0	0.6	0.7	1.3
TULAROSA PATT CORR RES. VAR. S.I.			0.2	0.2			0.1	0.3	
RESERVE PLAIN CORRUGATED	6.6	7.0	8.0	7.1	8.2	7.5	10.8	7.2	7.9
RESERVE PLAIN CORRUGATED S.I.		2.8	1.2	0.8	0.8	0.6	0.9	1.6	1.0
RESERVE INDENTED CORRUGATED		2.8	10.7	1.5	1.3	19.2	9.7	10.8	16.6
RESERVE INDENTED CORRUGATED S.I.		1.4	1.8	1.2	0.3	2.9	1.5	2.6	4.6
TULAROSA FILLET RIM			2.6	0.2		4.7	4.6	6.5	9.2
RESERVE PUNCHED CORRUGATED			0.3				0.6	0.7	
RESERVE PUNCHED CORRUGATED S.I.			0.1				0.1		1.3
RED INDENTED CORRUGATED			0.1						
TOTAL NUMBER OF SHERDS	152	71	4121	592	376	720	668	306	391

B/W = BLACK-ON-WHITE CORR. = CORRUGATED S.I. = SMUDGED INTERIOR VAR. = VARIETY

TABLE 2.—POTTERY ANALYSIS, APACHE CREEK PUEBLO, BLOCK I

POTTERY TYPES \ PROVENIENCES	APACHE CREEK PUEBLO BLOCK I														
	ROOM 1		ROOM 2		ROOM 3			RM. 3A		ROOM 4			ROOM 5	
	FILL	FLOOR	FILL	FLOOR	FILL	FLOOR 1	FLOOR 2	FILL	FLOOR	FILL ABOVE ROOF	FILL BELOW ROOF	FLOOR	FILL	FLOOR
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
ALMA PLAIN	9.1	10.0	23.1	11.3	32.8	24.5	26.7	27.0	18.0	24.4	25.4	7.1	22.2	20.6
ALMA PLAIN (VARIANT)								0.6						
ALMA ROUGH										3.2				
SAN FRANCISCO RED	5.7	5.0	5.3	2.8	1.3	2.9	0.9		2.0		1.6			
SAN FRANCISCO RED, SMUDGED INT.							1.2							
RESERVE SMUDGED BODY	17.0	28.8	19.3	23.9	17.9	24.8	23.8	23.4	14.0	21.0	20.6	28.5	25.0	21.6
RESERVE SMUDGED RIM	2.3	5.0	0.2	4.2	0.8	1.5	2.5	1.3	2.0		1.6	1.8	1.0	2.1
RESERVE BLACK-ON-WHITE	1.1		1.6	1.4	1.5	1.0	2.8	2.6	2.0	1.6	6.3		2.1	22.7
SPRINGERVILLE POLYCHROME	1.1			1.4										
ST. JOHNS POLYCHROME	3.4		1.4				0.3							
TULAROSA BLACK-ON-WHITE	5.7	2.5	5.3	4.2	2.0	2.9	0.6	1.3		11.3			5.2	1.0
TULAROSA B/W SUB-GLAZE			0.2		0.1									
KIATUTHLANNA BLACK-ON-WHITE								1.9	2.0		1.6			
MIMBRES BOLD FACE B/W	3.4	2.5	2.3	4.2	2.6	3.4	1.2	2.6		1.6	6.3		1.0	3.1
MIMBRES CLASSIC BLACK-ON-WHITE			0.5		0.1	1.0		0.6	4.0					
PUERCO BLACK-ON-WHITE	1.1		0.2			0.5	0.6		2.0			1.8		
RED MESA BLACK-ON-WHITE			0.5	1.4	0.7	0.5	1.2			1.6			1.0	
WINGATE BLACK-ON-RED	2.3		0.2	2.8	0.3	1.5								
INDETERMINATE BLACK-ON-WHITE	5.7	2.5	1.2		2.4	2.0	0.6	1.9	2.0	1.6	3.2	5.4	1.0	
PUERCO BLACK-ON-RED			0.2											
"CHACOAN" BLACK-ON-WHITE			0.2											
HOUCK POLYCHROME	3.4	1.3												
ALMA INCISED			0.2		0.5	0.5	0.3					1.8		1.0
ALMA SCORED					0.1									
ALMA SCORED, SMUDGED INTERIOR					0.1									
THREE CIRCLE NECK CORRUGATED			0.5								1.6		1.0	1.0
RESERVE INCISED CORRUGATED			0.7		0.4	2.5	0.3		2.0					2.1
RESERVE INCISED CORRUGATED, S.I.			0.5											
TULAROSA PATTERNED CORRUGATED			0.2		0.5	1.0		13.6						
TULAROSA PATTERNED CORR., S.I.					0.1	0.5	0.6	4.5						2.1
TULAROSA PATT. CORR. RESERVE VAR.	1.1		0.9		0.7	0.5	0.6	1.3						
TULAROSA PATT. CORR. RES. VAR. S.I.	1.1		0.7		0.1	0.5	0.3	0.6	2.0					
RESERVE PLAIN CORRUGATED	8.0	1.3	9.1	1.4	8.9	7.4	7.4	9.1	8.0	4.8		5.4	8.3	3.1
RESERVE PLAIN CORRUGATED, S.I.	2.4		3.0		2.2	4.4	2.8	4.5	4.0		3.2			2.1
RESERVE PLAIN CORR. TUL. VAR.			0.2	1.4										
RESERVE INDENTED CORRUGATED	15.9	21.1	10.2	16.9	16.7	2.5	7.1		24.0	17.7	14.3	28.5	20.8	13.4
RESERVE INDENTED CORRUGATED, S.I.	6.8	10.0	10.0	4.2	4.1	7.8	13.9		12.0	4.8	14.3	17.9	9.4	4.1
TULAROSA FILLET RIM	3.4	10.0	1.9	18.5	2.6	5.9	2.8	3.2		3.2		1.8	1.0	
RESERVE PUNCHED CORRUGATED			0.2		0.5		1.2			3.2				
RED INDENTED CORRUGATED							0.3							
TOTAL NUMBER OF SHERDS	88	80	430	71	756	204	323	154	50	62	63	56	96	97

B/W = BLACK-ON-WHITE CORR. = CORRUGATED S.I. = SMUDGED INTERIOR VAR. = VARIETY

TABLE 3.—POTTERY ANALYSIS, APACHE CREEK PUEBLO, BLOCK II, AND VALLEY VIEW

PROVENIENCES / POTTERY TYPES	APACHE CREEK PUEBLO BLOCK II					VALLEY VIEW PUEBLO			
	ROOM 6		RM. 7	ROOM 8		ROOM 1		ROOM 2	
	FILL	FLOOR	FILL	FILL	FLOOR	FILL	FLOOR	FILL	FLOOR
	%	%	%	%	%	%	%	%	%
ALMA PLAIN	8.3	17.6	11.6	18.1	5.3	12.4	4.1	18.0	14.1
ALMA PLAIN (VARIANT)	0.4		0.4	2.8	0.5			0.1	
ALMA ROUGH								0.2	
SAN FRANCISCO RED	0.9			1.6	1.4		1.0	2.2	2.5
SAN FRANCISCO RED, SMUDGED INT.									1.5
RESERVE SMUDGED BODY	16.5	25.4	17.4	12.3	16.4	23.3	3.1	18.3	16.9
RESERVE SMUDGED RIM		2.0	1.2	1.2		0.6		0.4	1.0
RESERVE BLACK-ON-WHITE	2.2		1.2	2.8	1.9	0.6		1.3	1.7
SPRINGERVILLE POLYCHROME	0.4				0.5				
ST. JOHNS POLYCHROME	0.9				0.5			0.1	
THREE CIRCLE RED-ON-WHITE				0.4				0.2	0.4
TULAROSA BLACK-ON-WHITE	9.1	7.8	2.1	2.4	2.9	5.6	8.2	4.9	4.3
TULAROSA B/W SUB-GLAZE				0.8				0.1	0.1
TULAROSA WHITE-ON-RED			0.4		0.5			0.1	
INDENTED BLACK-ON-RED						1.2		0.1	
WHITE MOUND BLACK-ON-WHITE									0.3
KIATUTHLANNA BLACK-ON-WHITE						0.6			
MIMBRES BOLD FACE BLACK-ON-WHITE	0.4		0.4	1.2	1.4	1.2	1.0	2.0	1.1
MIMBRES CLASSIC BLACK-ON-WHITE				0.4	0.5				
KLAGETOH BLACK-ON-WHITE									0.3
RED MESA BLACK-ON-WHITE	0.4		0.4					0.2	
WINGATE BLACK-ON-RED				2.0	0.5			0.4	0.3
INDETERMINATE BLACK-ON-WHITE	0.9		2.1	2.4	1.4	3.7		1.6	3.5
PUERCO BLACK-ON-RED				0.4		0.6		0.1	
"CHACOAN" BLACK-ON-WHITE								0.1	0.1
HOUCK POLYCHROME	0.4	2.0				0.6		0.2	
QUERINO POLYCHROME (?)									0.3
ALMA INCISED	0.4								
ALMA NECK BANDED									0.1
ALMA SCORED					0.5			0.1	0.1
THREE CIRCLE NECK CORRUGATED				0.4				0.1	
RESERVE INCISED CORRUGATED					1.9	1.2		0.4	0.1
TULAROSA PATTERNED CORRUGATED	0.4		1.2	0.8	1.0	1.2		0.6	0.7
TULAROSA PATTERNED CORR. S.I.				1.2				0.4	0.6
TULAROSA PATT. CORR. RESERVE VAR.	0.9	5.9	2.1	2.4				0.9	0.3
TULAROSA PATT. CORR. RES. VAR. S.I.			0.8	2.0	2.9			0.2	0.1
RESERVE PLAIN CORRUGATED	9.1	11.8	10.7	11.9	5.8	8.1	1.0	6.5	4.3
RESERVE PLAIN CORRUGATED, S.I.	5.7	2.0	4.5	2.4	1.4	2.5		1.2	1.6
RESERVE INDENTED CORRUGATED	29.3	5.9	28.7	15.8	19.8	21.1	73.4	25.8	28.5
RESERVE INDENTED CORRUGATED, S.I.	7.8	15.7	13.6	9.9	27.7	5.6	8.2	8.7	10.2
TULAROSA FILLET RIM	5.2	3.9	1.2	3.6	4.8	9.9		3.6	3.5
RESERVE PUNCHED CORRUGATED								0.4	1.1
RESERVE PUNCHED CORRUGATED, S.I.				0.4					
RED INDENTED CORRUGATED	0.4			0.4	0.5				
RED INDENTED CORRUGATED, S.I.									0.3
TOTAL NUMBER OF SHERDS	230	51	242	253	207	161	98	1154	722

B/W = BLACK-ON-WHITE CORR. = CORRUGATED S.I. = SMUDGED INTERIOR VAR. = VARIETY

IV. Pottery of the Jewett Gap Site

By Eloise Richards Barter

The Tularosa Phase Jewett Gap Site is located in the west central portion of New Mexico, in the Perry Lawson Canyon drainage, on the south side of the divide between the Fox and Gallo Mountains (SE $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 24, Twp. 3 S., R. 18 W.; Site New Mexico F:14:1 in the Gila Pueblo survey system). The altitude at the site is 8,100 feet above sea level. The surrounding country is covered with open yellow pine forest, in which wild game is still plentiful. A spring that today flows the year around is located 300 yards from the site. Location near a permanent, abundant water supply is a characteristic of Tularosa Phase sites.

Surface indications show that the site consisted of approximately twenty-five rooms, seventeen pit-kivas, and four scattered clusters of one to four contiguous rooms. During the seasons of 1947, 1948, and 1949, portions of the Jewett Gap Site were excavated for Gila Pueblo, under the direction of Dr. Deric O'Bryan. Four pit-kivas and twelve rooms were completely cleared, while four pit-kivas and five rooms were trenched. None of the scattered room clusters were investigated. A report on the architecture of the Jewett Gap Site is being prepared by Mr. William Bullard. The site map, indicating location of burials, is included in that work. Extensive trenching was done in the refuse areas. Sixty-two burials were uncovered during the course of the work.

The material recovered at the Jewett Gap Site had not been analyzed when Gila Pueblo was dissolved. The artifacts, field notes, and other materials pertaining to the excavations were deposited in the Arizona State Museum along with the rest of the Gila Pueblo collections.

The pottery from the Jewett Gap Site was made available for study during the fall of 1954.[1] Factors inevitable in the storage and transfer of un-

[1] The material in the following section is a summary of descriptive portions of a thesis presented in partial fulfillment of the requirements for the degree of Master of Arts, Department of Anthropology, University of Arizona. I wish to thank Dr. Emil W. Haury, Dr. E. B. Danson, Dr. Paul S. Martin, Dr. John B. Rinaldo, Miss Elaine Bluhm, Dr. Deric O'Bryan and Dr. Harold S. Gladwin for making the material available, and for their willingness to discuss even minor problems. Permission to publish this chapter was granted by Dean David L. Patrick, of the graduate college.

studied material—difficulty in locating individual specimens, discrepancies and clerical errors in cataloguing, and breakage—had depleted the original collection. Unfortunately, all the sherds had been discarded, and no detailed counts were accessible to me.

Measurements and observations (shape, surface treatment, design elements and layout, fireclouding, wear, and use-darkening) were made on the 265 whole and restorable vessels remaining in the collection. In addition, vessels no longer included in the collection were, when possible, identified as to type from photographs and the field notes so that provenience lists would be complete.

CULINARY TYPES

There were 204 unpainted vessels in the collection, representing 12 recognized pottery types. Similarity to types described for the Reserve area seems significant enough to retain type names already established (Rinaldo and Bluhm, 1956). The variation from the described ranges is in no case great enough to designate a new type.

A few features seem to cross-cut all the types found at the Jewett Gap Site.

The interiors of bowls are always smudged and highly burnished, with the exception of Alma Plain and one bowl of Tularosa Fillet Rim (probably burnt out). Jars, while occasionally darkened, are not typically smudged in the interior. This is perhaps due to the difficulty of finishing the interior of a vessel with a relatively narrow orifice. Nor would smudging the interior of a jar be decorative, as it is in bowls.

Fireclouding on all types of bowls is primarily restricted to the rims. Some experimental attempts at smudging the interior of bowls at Chicago Natural History Museum camp at Pine Lawn indicated that one satisfactory method was to invert the bowl over pitchy pinewood, and to cover the exterior with large sherds to prevent exterior smudging. The location of fireclouds on the Jewett Gap Site bowls seems to indicate that this method, or a variant of it, may have been used.

There is no apparent localization of fireclouding on jars.

Vessels of the corrugated types occasionally had indented or nipple bases. The indented base was formed by making a hemispherical form of coils, then beginning the vessel from this base, rather than from a flat base of coils. Related to the indented base is the nipple base. In this form the beginning coils are made into a hollow cone, protruding as much as five centimeters into the vessel (fig. 55, *m*).

The indented base is common in the following types at the Jewett Gap Site: Reserve Indented Corrugated, Reserve Plain Corrugated, and

Tularosa Patterned Corrugated. It is found, but is not common, in Tularosa Fillet Rim and Tularosa Patterned Corrugated, Reserve Variant. It appears mainly in bowls.

Three nipple bases are present, two in Reserve Plain Corrugated bowls, and one in a Tularosa Patterned Corrugated bowl 39 cm. in diameter. In all of these the nipple shows some wear, mostly localized at the end of the protuberance. No indication of use is present.

The nipple base is not found in the Reserve area, although indented bases occur occasionally. Nipple bases are found at Point of Pines (personal communication, E. W. Haury).

The indentations on indented corrugated types seem to have been made with both a blunt, rounded tool (such as a dull awl) and the fingers. When indications are clear, the techniques seem to be divided about half and half.

Bowls always seem to have finer corrugations than jars.

A summary of descriptive material for the culinary types is given in Table 5. Modal shape refers to the most common shape numerically within the type (see fig. 55 for shapes). Modal range in height and diameter represents the maximum height and diameter in centimeters of the majority of vessels. The range of number of coils per two centimeters and the modal number of coils per two centimeters are also given for the corrugated types.

Alma Plain

The Alma Plain vessels are all in the established tradition of Alma Plain. In addition to the shapes listed in Martin and Rinaldo (1950a, p. 359), a variant pitcher and jar shape were present in the Jewett Gap Site collection (fig. 55, *i*, *l*).

San Francisco Red

Four large jars of San Francisco Red were found (fig. 56, *n*). One was too badly damaged to reconstruct. Two appear to have partially collapsed during construction. The fourth is identical in shape with a Tularosa Black-on-White jar (fig. 56, *m*) that was found in the same grave (burial 21).

Reserve Plain Corrugated

Two variants of Reserve Plain Corrugated bowls are distinguished—Reserve Plain Corrugated, and Reserve Plain Corrugated, Tularosa Variant. The latter has two rows of indented coils added just below the rim. The coils on the body of these bowls also seem to be slightly finer than those

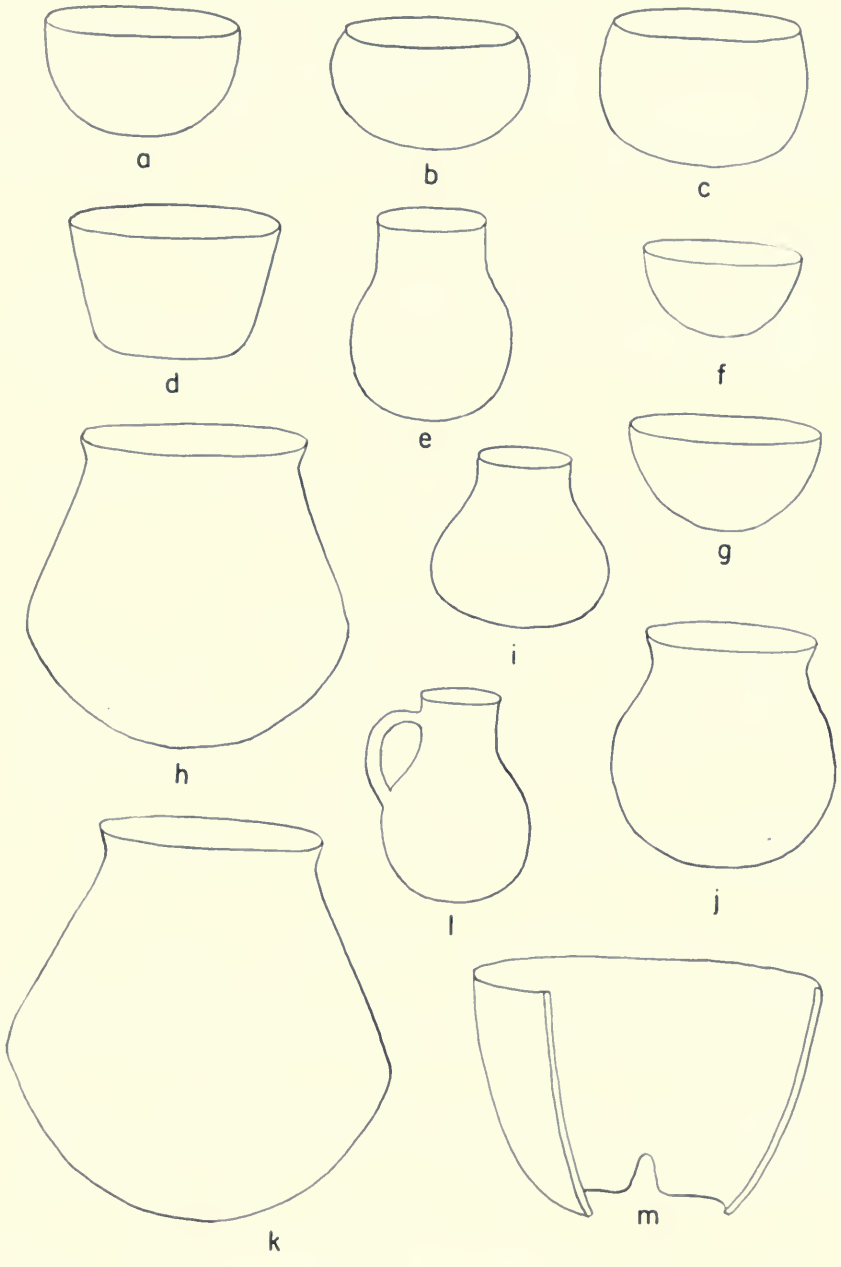

Fig. 55. Representative culinary shapes at Jewett Gap Site.

on bowls with only plain corrugations. The Tularosa variant had been recognized by the Chicago Natural History Museum staff during work in the Reserve area, but appeared so infrequently that it was not described. At the Jewett Gap Site five of eleven Reserve Plain Corrugated bowls were of the Tularosa Variant.

Reserve Indented Corrugated

The largest vessels in the collection are Reserve Indented Corrugated and are frequently over 30 cm. in height. These are not found in burials but are often set in the floor of a room, presumably for storage space (fig. 55, *k*). Smaller jars (fig. 55, *j*) are more frequently used for cooking.

Reserve Smudged

Reserve Smudged bowls seem to have been used most frequently for cooking. Note that the modal shape of Reserve Smudged bowls differs from that of other bowls (Table 5).

Tularosa Patterned Corrugated

The Tularosa Patterned Corrugated of the Jewett Gap Site differs in two respects from that of the Reserve area. Design elements are different and smaller elements are more frequently used to form the pattern. Chevrons, diamonds, and square spirals are the most common designs in the Reserve area (Rinaldo and Bluhm, 1956). None of these are represented on specimens from the Jewett Gap Site, where triangles and oblique short lines are the most frequent designs.

Tularosa Patterned Corrugated, Reserve Variant

The Tularosa Patterned Corrugated, Reserve Variant (formerly plain and indented corrugated) which is found at the Jewett Gap Site has three different decorative schemes. The treatment is either alternate plain coils and indented coils; or three rows of plain coils alternated with three rows of indented coils; or the lower half of the vessel is composed of indented coils while the upper half is plain coils. A bowl and a jar of each type of decoration are in the collection.

Tularosa Fillet Rim

This is the most popular type at the Jewett Gap Site. Vessels vary primarily in size. The number of indented fillets ranges from one to four, but two fillets were by far the most common.

Alma Punched, Reserve Punched Corrugated, and Reserve Incised Corrugated

The two Reserve Punched Corrugated, two Reserve Incised Corrugated and one Alma Punched vessel conform in all respects to the description of these types in the Reserve area.

PAINTED TYPES

Reserve Black-on-White

Seven vessels were identified as Reserve Black-on-White (fig. 56, *b*). Two were bowls and five were pitchers. Three of the pitchers show definite influence of Puerco Black-on-White (fig. 56, *g*).

Puerco Black-on-White

Only one bowl of Puerco Black-on-White was included in the collection.

Puerco Black-on-Red

One bowl of Puerco Black-on-Red was associated in burial 50 with three Wingate Black-on-Red bowls. It is highly polished, while the Wingate examples are not. The design is somewhat unusual. The primary elements are a horizontal band of contiguous diamonds, which are filled with checkerboards. Also, there are, just below the rim, panels of three horizontal solid lines separated by squares filled with checkerboards.

Wingate Black-on-Red

The three vessels of Wingate Black-on-Red, all from burial 50, conform in all respects to the original description by W. and H. S. Gladwin (1931).

"St. Johns Black-on-Red"

One pitcher is of an undescribed type that is called St. Johns Black-on-Red by some archaeologists. The black paint is glazed. It is almost identical with a pitcher of Tularosa Black-on-White (fig. 56, *f*).

Starkweather Smudged Decorated

The one bowl of Starkweather Smudged Decorated is somewhat atypical in design (fig. 56, *c*). The checkerboard element on the bottom of the bowl is one often found in Puerco Black-on-White.

Tularosa White-on-Red

Tularosa White-on-Red is represented by two bowls. They are in no way different from those described for the Reserve area.

Springerville Polychrome

Two polychrome vessels are included in the collection. Both are the variants of St. Johns Polychrome that are now called Springerville Polychrome. The one is typically St. Johns, except that the interior black design is glazed paint. The second has white paint outlining the interior black design. The exterior treatment of this latter vessel consists of two wide horizontal bands of white, more typical of Houck Polychrome than of St. Johns and Springerville Polychromes. Both of these vessels are from fill.

Preliminary sherd counts indicate that both St. Johns Polychrome and Houck Polychrome were present in sherd form. No frequencies are obtainable.

Mimbres Black-on-White

While no vessels of Mimbres Black-on-White are in the collection, the preliminary sherd counts show that sherds of this type were found.

GENERAL COMMENT

Black Glaze Paint is found on two Tularosa Black-on-White pitchers, and on one each of Springerville Polychrome and St. Johns Black-on-Red. The use of glaze does not seem to occur in the Tularosa and San Francisco Valleys before the beginning of the Tularosa Phase, but is earlier in the Forestdale region (personal communication, E. W. Haury).

Nor does the use of exterior white paint become popular in this region before the beginning of the Tularosa Phase. Occasional Reserve Black-on-White sherds with exterior designs in white have been found at Pine Lawn, but are much more frequent to the west (personal communication, E. B. Danson).

There is evidence that McDonald Corrugated is earlier at Point of Pines than in the Tularosa drainage, and Tularosa White-on-Red may perhaps be earlier (personal communication, E. B. Danson). Exterior white paint, as a concept, seems to center to the west of the Tularosa Valley.

These western-centered ideas of glaze and exterior white paint probably entered the Tularosa Valley for the first time during the span of the Jewett Gap Site. Evidence seems to be piling up that during the same time period (and somewhat later), ideas (and perhaps people) from the Tularosa Valley were moving west. It is impossible to tell from the pottery alone whether the abandonment of the Jewett Gap Site was part of this western movement.

Tularosa Black-on-White

Forty-three vessels of Tularosa Black-on-White were identified among the pottery from the Jewett Gap Site (fig. 56, *a*, *d–f*, *h–m*, *o*, *p*). They do not differ in content from the Tularosa Black-on-White collection known from excavations in the Reserve area, and from vessels in Chicago Natural History Museum purchased from collectors near Springerville, Arizona (ca. 1900). Two of the pitchers at Jewett Gap had glaze paint.

No significant difference was discerned between the shapes of vessels found in the burials, and those from the rooms and trash. The apparent emphasis on the jar form in the rooms and trash is attributed to sample size (10 vessels). The only evidence of the ladle form was one handle from fill. This is not included in the following list of whole vessels.

	Burial		Room and fill		Total	
Shape	No.	%	No.	%	No.	%
jar	5	50	9	27	14	33
pitcher	2	20	9	27	11	26
bowl	2	20	5	15	7	16
duck effigy	1	10	4	12	5	12
ring vessel	..		3	9	3	7
quadrilobate jar	..		2	6	2	5
canteen	..		1	3	1	2
Total	10		33		43	

Tularosa Black-on-White vessels seem to be smaller and more uniform in size than culinary vessels of any one type.

Shape	Range in height in centimeters	Average height in centimeters	Modal height in centimeters
jar	6.0–24.0	12.0	12.0
pitcher	8.0–17.0	12.9	10.5
duck effigy	6.5–11.5	10.0	10.5
ring vessel	5.0–12.0	7.4	10.0
quadrilobate jar	5.5, 9.5		
canteen	14.5		
	Diameter		
bowl	7.5–24.0	17.8	17.5

Tularosa Black-on-White vessels are, in all forms, greater in maximum diameter than they are in maximum height. Culinary jars tend to be the same in maximum diameter and height.

Tularosa Black-on-White, both in its traditional usage and as now defined, includes many styles of design. It is perhaps for this reason that the most productive analysis of the Jewett Gap Site Tularosa Black-on-White designs came from design motifs, rather than details of elements. (Design motif: "The design, either element or unit, which is strongest in a pattern and forms the base thereof." *Clearing House for Southwestern Museums News-Letter*, no. 35, p. 120.)

The most common design motif in the Jewett Gap Site collection, "interconnected opposed solid terraces," is found on 32 per cent of the Tularosa Black-on-White (14 vessels). It occurred on all shapes except quadrilobate jars.

On 8 vessels (18.6 per cent) of the collection, "compound solid circular scrolls, connected by diamonds, half terraces, or checkerboards" is used as a primary motif. This is common on duck effigies, where the scrolls represent the wings and the breast. On both regular and quadrilobate jars, four scrolls are used at equidistant points.

"Interlocking solid and hatched square scrolls" are present, appearing on 9.3 per cent of the vessels (4 vessels). Only pitchers and jars occur with this motif. The larger jars, with constricted necks, are limited to it.

"Solid line zig-zags" occur on three jars (6.9 per cent). All these jars are small and carelessly painted.

"Weaving" is represented by two pitchers (4.6 per cent), as is the "hourglass" motif.

FIG. 56. Pottery from Jewett Gap Site

(*a*) Tularosa Black-on-White bowl (cat. no. G.P. 51546); from burial 24. Diameter, 24 cm.

(*b*) Reserve Black-on-White bowl (cat. no. G.P. 51500); from burial 53. Diameter, 18 cm.

(*c*) Starkweather Smudged Decorated bowl (cat. no. G.P. 51520); from burial 22. Diameter, 23 cm.

(*d*) Tularosa Black-on-White quadrilobate jar (cat. no. G.P. 51408); from burial 1. Height, 5.5 cm.

(*e*) Tularosa Black-on-White jar (cat. no. G.P. 51456); from fill, Grid M-1. Height, 7.5 cm.

(*f*) Tularosa Black-on-White pitcher (cat. no. G.P. 51491); from burial 43. Height, 17 cm.

(*g*) Reserve Black-on-White pitcher (cat. no. G.P. 51536); from burial 23. Height, 14.5 cm.

(*h*) Tularosa Black-on-White duck effigy (cat. no. G.P. 51519); from burial 43. Height, 10.5 cm.

(*i*) Tularosa Black-on-White pitcher (cat. no. G.P. 51537); from burial 55. Height, 17.5 cm.

(*j*) Tularosa Black-on-White pitcher (cat. no. G.P. 51469); from fill, Grid L-6. Height, 12 cm.

(*k*) Tularosa Black-on-White pitcher (cat. no. G.P. 51474); from burial 18. Height, 12.5 cm.

(*l*) Tularosa Black-on-White ring vessel (cat. no. G.P. 51435); from burial 18. Height, 9 cm.

(*m*) Tularosa Black-on-White jar (cat. no. G.P. 51540); from burial 21. Height, 25 cm.

(*n*) San Francisco Red jar (cat. no. G.P. 51539); from burial 21. Height, 25.9 cm.

(*o*) Tularosa Black-on-White canteen (cat. no. G.P. 51510); from burial 25. Height, 14.5 cm.

(*p*) Tularosa Black-on-White duck effigy (cat. no. G.P. 51483); from burial 21. Height, 11.5 cm.


a
b
c
d
e
f
g
h
i
j
k
l
m
n
o
p

One vessel of each of the following motifs occurs: "interlocking solid and hatched circular scrolls;" "bands of opposed solid terraced oblique lines separated by rows of hatched diamonds or stepped squares;" "nested solid and hatched terraces;" "solid classic meanders in bands, with fillers of hatched V's;" "triangular solid scrolls;" "cribbing;" "horizontal solid stripes;" "solid square scrolls;" and "hatched stepped squares separated by saw-tooth solids."

On all the forms except bowls, the primary body design begins just below the base of the neck. In 30 vessels (69.8 per cent) there is a circular top framing line, and the design is applied in a wide continuous band around the body. In 6 vessels (13.9 per cent), the top framing line is rectangular and a quartered layout is used for the design. This latter occurs in one quadrilobate vessel, two jars, two duck effigies, and one canteen.

The design layout in three bowls (6.9 per cent) is quartered, and in four (9.3 per cent) is a continuous band.

A circular framing line is used at the base of the body design in 15 vessels (35 per cent). A line forming a star, with from four to eleven points, appears on 8 of the vessels (18.5 per cent). In three of the bowls the base design forms a square (6.9 per cent). In 16 vessels (37.2 per cent) there is no basal framing line. The one remaining vessel is too worn to discern the design ending.

There is no correlation between the type of design used on the neck of jars, pitchers and effigies, and the motif of the body design. The neck design on 18 vessels (42 per cent) is opposed half terraces. These can be either solid or open; frequently both occur on one vessel. Triangular scrolls are used on five vessels (11.5 per cent). Alternate panels of vertical and horizontal solid lines appear on three vessels (7 per cent). The neck designs of the remaining 10 vessels were all different.

Plain strap, and bird and animal effigy knob handles are the most frequent. No particular pattern is noted.

HANDLES

Pitchers
- plain strap 3
- knob
  - animal effigy 4
  - bird effigy 0
  - missing 4
  - flattened 1

Quadrilobate jar
- bird effigy 1

Canteen
- lug loops 1

Duck effigies
- plain strap 1
- knob
  - animal effigy 1
  - bird effigy 1
  - missing 1

Ring vessels
- plain strap 3

Ticking occurs on over 90 per cent of the rims. The lip is straight, but the shape of the rim shows much variation, even in one vessel.

There is no Roosevelt Black-on-White from the Jewett Gap Site. Those criteria of design and shape (no effigy handle, circular base framing line, straight line design on neck) that have been used to distinguish Roosevelt from Tularosa Black-on-White are present but do not occur together consistently. Comparison of the Jewett Gap Site Tularosa Black-on-White with the Roosevelt Black-on-White from the Gila Pueblo collection (now at the Arizona State Museum) showed a distinct difference in surface color. This may be further evidence that a change in clay source as the Tularosa tradition moved west, along with the selection of certain of the Tularosa characteristics, resulted in Roosevelt Black-on-White.

As the Jewett Gap Site is an early or middle Tularosa Phase site, the Tularosa Black-on-White from it can be considered as an early stage in the development of the type.

The Jewett Gap Site Tularosa Black-on-White does not vary in content from that in the Tularosa Black-on-White collection of 350 vessels in Chicago Natural History Museum from four undated sites. There is, however, a striking difference in the percentage of occurrence of shapes and design motifs between the Tularosa Black-on-White of the purchased collection and that of the Jewett Gap Site. Tentatively, these differences are thought to be an expression of the early stage in the development of Tularosa Black-on-White at the Jewett Gap Site.

TULAROSA BLACK-ON-WHITE: VESSEL SHAPE

Shape	Jewett Gap Site %	Chicago Natural History Museum collection %
jar	33	12
pitcher	26	46
bowl	16	8
duck effigy	12	4
canteen	7	6
ring vessel	5	1
ladles	(one handle)	20
other	..	3

The combined percentages of jars and pitchers are in both cases about the same. Pitchers are, however, far more common in the "Later" purchased collection. Handles seem to be increasing in popularity. Bowls seem to be more common at the Jewett Gap Site. The duck effigy and ring vessel shapes appear to be more frequent at the Jewett Gap Site but are less exuberant. The increase in ladles is inexplicable.

Some rather striking differences can also be observed in the design motifs.

TULAROSA BLACK-ON-WHITE: MOST FREQUENT MOTIFS

Design motif	Jewett Gap Site %	Chicago Natural History Museum collection %
opposed solid terraces	32	9
interlocking hatched and solid square scrolls	9	16
interlocking hatched and solid circular scrolls	2	14
weaving	5	4
solid triangular scrolls	2	4
solid terraces separated by hatched squares	2	4
solid circular compound scrolls	19	
solid zigzags	7	

The majority of the vessels at the Jewett Gap Site are of two motifs: "opposed solid terraces" and "solid circular compound scrolls." These are three times as popular at the Jewett Gap Site as in the purchased collection. "Interlocking hatched and solid circular scrolls" do not appear with frequency at the Jewett Gap Site but are numerous in the purchased collection. At the Jewett Gap Site solid design elements predominate over the hatched and solid of "classic" Tularosa.

Comparison of a picture of the Hough collection (Hough, 1907, pl. 7) from the Delgar Ranch seems to show more similarity in the Delgar Ranch pottery to that of the purchased collection. The Delgar Ranch is, from surface indications, a much later site than Jewett Gap Site.

Again, it must be stressed that these speculations rest on a very shaky foundation. The changes noted might easily be a product of geographic isolation at the Jewett Gap Site, rather than a temporal development within one tradition.

Associations with Tularosa Black-on-White

Vessels that are placed in the same grave, or are found on the same house floor, were in use contemporaneously. At the Jewett Gap Site the following pottery types are found in association with Tularosa Black-on-White in grave or floor association: Tularosa Fillet Rim, Reserve Indented Corrugated, Reserve Neck Indented Corrugated, Reserve Plain Corrugated, Reserve Plain Corrugated, Tularosa Variant, Tularosa Patterned Corrugated, Tularosa Patterned Corrugated, Reserve Variant, Reserve Black-on-White, Alma Plain, Reserve Smudged, San Francisco Red, Tularosa White-on-Red.

This is not an unexpected list of associations. All the types considered to be guide types to the Tularosa Phase are present, with the exception of St. Johns Polychrome. A Springerville Polychrome (glaze paint) was found in fill association with Tularosa Black-on-White.

Use of Pottery at Jewett Gap Site

The large collection of pottery from the Jewett Gap Site provided the basis for an attempt to correlate archaeological pottery types with the functional classifications of the prehistoric inhabitants. The amount of wear shown on a vessel and the darkening of the exterior from use (as would occur when a pot was placed over a fire) show a significant difference for both bowls and jars, as well as for "types" recognized by archaeologists.

	Bowls		Jars	
Culinary types	% worn	% use-darkened	% worn	% use-darkened
Reserve Ind. Corr.	40	18	40	75
Reserve Plain Corr.	50	10	28	72
Alma Plain	..	..	75	0
Tul. Patt. Corr. & Tul. Patt. Corr. R. Var.	10	0	0	0
Reserve Smudged	70	70		
Tul. Fillet Rim	75	22		

From this, it would appear that the types used most frequently for cooking were Reserve Indented Corrugated jars, Reserve Smudged bowls, Reserve Plain Corrugated jars.

Types that may have been used primarily for storage and serving vessels and only occasionally for cooking were Tularosa Fillet Rim bowls, Reserve Plain Corrugated bowls, Reserve Indented Corrugated bowls.

A high percentage of Tularosa Fillet Rim bowls showed wear but apparently were not primarily used for cooking. Inspection of Tularosa Fillet Rim from the Reserve area Tularosa Phase sites indicates that it was the primary cooking utensil there.

Alma Plain jars show a high percentage of wear, but no use-darkening. These may have been used for water containers or dry storage.

Patterned Corrugated vessels show little wear and no indication of use for cooking. Spindle and indented bases are found most frequently on those types that apparently were not used directly over the fire.

Among the historic Yuman tribes, there is a definite correlation of shape and function of pottery. A wide, outflaring bowl is used for serving, and an incurved bowl for cooking (Forde, 1931, p. 123). At Jewett Gap Site, Reserve Smudged bowls, which seem to have been most frequently used for cooking, differ slightly in modal shape from bowls of other types (Table 5). This may be a reflection of an idea similar to that of the Yumans.

No use-darkening was noted on any of the painted vessels. About 50 per cent of the Tularosa Black-on-White vessels were worn. Rim wear was most frequent on small pieces, particularly the duck effigies. A Tularosa

Black-on-White jar was found in Room E, inside a larger storage jar. In removing stored vessels from a container like this, there is a possibility that the rim might be worn by scraping against the larger vessel.

Burial Patterns

The skeletal material from the Jewett Gap Site was not studied, nor is the whole collection available. The field notes do include estimates of age and sex for about 75 per cent of the burials. This material is used here, uncritically, in an attempt to ascertain burial patterns, especially in regard to the distribution of pottery (fig. 57).

There were sixty-two burials. Fifty-two were found in the trash (83.9 per cent), nine under the floors of rooms (14.3 per cent), and one from a pit-kiva (1.6 per cent).

Most of the burials were loosely flexed. A very small number of extended and fully flexed burials were present. The majority of the individuals were on their backs, with an occasional one laid on his side. The head was oriented toward the east or east-northeast in every instance. The position of the body is apparently not related to the age or sex of the individual.

Less than 20 per cent of the burials had material other than pottery with them. The number and kind of these grave goods had no correlation with the age or sex of the individual, or the amount of pottery present in the grave. When present, these non-pottery offerings consisted primarily of beads, bracelets, or pendants.

The pottery in the grave was arranged about the body, usually near the head or shoulders. There is a slight tendency to place more vessels to the left than to the right of the individual, although this is far from uniform.

In the number of vessels per burial there is no correlation with age or sex. The number of vessels in a grave range from 0 to 22. The pattern is two or three vessels per individual. More than one vessel is included in 77.8 per cent of the burials, while 60 per cent have three or less. The burial containing 22 vessels is that of an adult male.

Both bowl and jar forms are usually included in one grave (73 per cent). One burial has one lone Tularosa Black-on-White bowl. No other has all painted vessels. The individuals buried with the larger number of pots are more likely to have at least one painted vessel included. This may be an indication that painted pottery and large numbers of pots in a grave are symbols of wealth or prestige. It may simply show that the more vessels there are, the greater the chance that at least one painted vessel is included.

There are several indications that the pottery in an individual's grave was used by him (or his household) during his lifetime.

FIG. 57. Chart showing association of pottery with burials by age and sex and in rooms.

The vessels from the rooms and trash do not show any greater percentage of wear than do those from the burials. This is true for both painted and culinary types. Pottery was not made especially for burial inclusion.

Every burial for which the sex of the individual is known has at least one vessel darkened from use and is presumed to be a cooking utensil. In the total vessels from female burials, 40 per cent are darkened by use. Male burials, on the other hand, have only 26 per cent that show evidence of use in cooking.

It may be that the vessels in some burials were made by one person. Four Tularosa Patterned Corrugated vessels are found in burial 38, far above the expected chance occurrence. Only two vessels in the collection have indentations formed by incisions. Both are in burial 8. The San Francisco Red and Tularosa Black-on-White jars from burial 21 are almost identical in shape.

Among the culinary types, there is a tendency for vessels with adolescent and child burials to be poorly finished. Those painted vessels that were most difficult to assign to a type were also from child and adolescent burials. All miniatures were with burials of children and infants, when there was any indication of age.

The eccentric shapes (duck effigies, ring vessels, and quadrilobate jars) seem to have a definite association with children or females. Of the four duck effigies found with burials, two were with adult females and two were with children under six years of age. A quadrilobate vessel was also found with one of the children. One ring vessel was with an adolescent of undetermined sex, one with an adult, sex unknown, and the third with a child of about five years of age.

There is no indication of function in the form of duck effigies, ring vessels, and quadrilobate jars. All three forms are frequently worn.

The seeming correlation between these eccentric forms and female and child burials may find its explanation in speculations by Martin and Rinaldo on the Mogollon social organization (Martin and Rinaldo, 1950b, p. 568). They feel that during the latest phases of Mogollon occupation in the Reserve area, matrilineal organization was common. It may be that duck effigies are connected with this.

In the absence of absolute dates, a site can only be fitted into an existing arbitrary sequence. The most comparable one in this case is the phase system as applied in the Reserve area.

The Jewett Gap Site has been called a Tularosa Phase site. This is believed to be so, but a few qualifying remarks should be added.

The collection of pottery has been treated as a whole, as if it were from one time. This is, of course, unlikely. Attempts to divide the burials, and the few rooms in which there was whole pottery, into a temporal se-

quence were conspicuously unsuccessful. It was obvious, however, that some of the burials were earlier than others, and were probably of that time period called the Reserve Phase.

Most of the culinary types can not, by their mere presence, be placed in a particular phase. The same is true for several of the painted types. But there were present at the Jewett Gap Site all those types which are considered to be the arbitrary "guide types" to the Tularosa Phase. The site, ergo, is of the Tularosa Phase at least in part. This is not to deny that part of the occupation may have taken place during the Reserve Phase.

Any dates assigned to the Jewett Gap Site should be consistent with dates for the Tularosa Phase elsewhere, and reflect the fact that it is thought to be early in the phase. The time span of roughly A.D. 1100–1125 (with probably some earlier occupation) seems best to express these conditions.

TABLE 4.—BREAKDOWN OF POTTERY TYPES STUDIED, JEWETT GAP SITE

Type	Room and fill	Burial	Total
Tularosa Black-on-white	10	33	43
Springerville Polychrome	2	. .	2
Tularosa White-on-red	1	1	2
Wingate Black-on-red	. .	3	3
St. Johns Black-on-red	. .	1	1
Starkweather Smudged Decorated	. .	1	1
Puerco Black-on-white	. .	1	1
Reserve Black-on-white	. .	7	7
Puerco Black-on-red	. .	1	1
Painted totals	13	48	61
Tularosa Fillet Rim	10	54	64
Reserve Indented Corrugated	12	37	49
Reserve Indented Neck Corrugated	. .	6	6
Reserve Smudged	6	24	30
Reserve Plain Corrugated	2	14	16
Reserve Plain Neck Corrugated	1	5	6
Alma Plain	1	10	11
Alma Punched	. .	1	1
San Francisco Red	3	1	4
Tularosa Patterned Corrugated	. .	7	7
Tularosa Patterned Corr., Reserve Var.	. .	6	6
Reserve Punched Corrugated	1	1	2
Reserve Incised Corrugated	1	1	2
Culinary totals	37	167	204
Total painted	13	48	61
Total vessels in collection	50	215	265

TABLE 5.—SUMMARY OF CULINARY SHAPES, JEWETT GAP SITE

	Sample number	Modal shape	Modal Range in Centimeters		Number of Coils per two cm.		Indented base	Nipple base
			Diameter	Height	Range	Mode		
BOWLS								
Alma Plain	2	f	10.0-14.9	5.0- 9.9	. .	.	. .	.
Reserve Plain Corrugated	5	a	15.0-19.9	5.0- 9.9	5-9	7	1	2
Reserve Plain Corrugated, Tularosa Variety	6	f	20.0-24.9	10.0-14.9	6-9	8	4	.
Reserve Indented Corrugated	31	d	15.0-19.9	10.0-14.9	4-9	6	13	.
Tularosa Patterned Corrugated	6	f	15.0-19.9	5.0- 9.9	6-9	6	1	1
Tularosa Patterned Corr., Reserve Variety	3	f	15.0-19.9	5.0- 9.9	5-9	6	.	.
Reserve Smudged	30	b,c,d	20.0-24.9	10.0-14.9	. .	.	.	.
Tularosa Fillet Rim	64	g,a,d	20.0-24.9	10.0-14.9	. .	.	7	.
JARS								
Alma Plain	9	i,l	5.0- 9.9	5.0- 9.9	. .	.	.	.
San Francisco Red	4	i	25.0-29.9	25.0-29.9	. .	.	.	.
Reserve Plain Corrugated	5	j,e	10.0-14.9	10.0-14.9	4-6	6	.	.
Reserve Plain Neck Corrugated	6	j	10.0-14.9	15.0-19.9	4-6	4	.	.
Reserve Indented Corrugated	18	j	10.0-14.9	10.0-19.9	3-8	5	1	.
Reserve Indented Neck Corrugated	6	j	15.0-19.9	15.0-19.9	4-8	5	.	.
Tularosa Patterned Corrugated	1	h	27.5	29.5	6	.	.	.
Tularosa Patterned Corr., Reserve Variety	3	j	10.0-14.9	10.0-14.9	5-8	5	.	.
Reserve Punched Corrugated	2	h	10.0-14.9	10.0-14.9	6	6	.	.

V. Summary

By Paul S. Martin

The purposes of the 1954 expedition to New Mexico were two: (1) to dig one or two kivas; and (2) to dig in villages that were occupied during the last phase of the Alpine Branch.

We excavated portions of three sites: (1) the Great Kivas at Higgins Flat and a smaller depression nearby; (2) part of Apache Creek Site; and (3) a few rooms in Valley View Site.

1. We returned to Higgins Flat Site—one of the latest in the area—in order to dig two depressions, one large and one small, and to trench a small pueblo near the large depression. The large depression turned out to be two Great Kivas, one inside the other, each with a broad ramp entryway. The smaller and lower of the Great Kivas was the earlier one. This is the third such building to be excavated in the Southwest. The smaller depression was a subterranean structure with masonry walls and we refer to it as a Pithouse Kiva. This term is awkward but functional, for we believe that such late structures served a dual purpose. The small pueblo had been partially dismantled in prehistoric times and yielded very little information. When we left Higgins Flat Site, we noted several more unexcavated depressions.

2. We also sampled Apache Creek Site because it was about to be destroyed by road construction. Here we dug nine surface rooms and trenched the outlines of the plaza wall. We noted several depressions adjacent to the pueblo. Further reference to this site will be made below in connection with some subterranean structures excavated by a salvage program crew.

3. A short time was spent at a third site called Valley View and here we dug two surface rooms.

The whole question of Great Kivas in the Blue River–Pine Lawn–Reserve–Jewett Gap areas needs to be re-examined in the light of our 1954 finds.

When we dug the SU Site, we found two large pithouses (A and V) that differed somewhat from the others. At first, we did not even mention the possibility that Pithouse A might have been a ceremonial structure. In a later report (Martin and Rinaldo, 1947, p. 292) we suggested that A and V might have been used for ceremonial purposes during the Pine Lawn Phase.

But even after that cautious admission for that phase, we somehow lost the thread of our kiva development. We did suggest that House Y (Three Circle Phase) at the SU Site (Martin and Rinaldo, 1947) may have been a kiva. But in the report on our first excavations in Three Circle and Reserve Phase sites (Martin, Rinaldo, and Antevs, 1949) we report that no kivas were found. Later, in the Turkey Foot Ridge report we refer to kiva features in two houses (Martin and Rinaldo, 1950a), but we apparently did not sense the importance of these data. Actually, we dug another house at Turkey Foot Ridge (House K) that we would now call a kiva. In fact, we feel fairly certain that House K was the grandfather of the later Great Kivas, two of which are reported herein. In this connection, mention should be made of two other houses at Crooked Ridge Village, Arizona, that Wheat calls ceremonial (Wheat, 1954, pp. 58–61). These houses are similar to our House K.

In our report on sites of the Reserve Phase (Martin and Rinaldo, 1950b) we stated that we found no kivas with the surface pueblos. We observed depressions near some of the pueblos but these turned out to be pithouses of an earlier day.

The connections between pithouses of the Pine Lawn Phase and the pithouse-kivas of the Tularosa Phase have not been and are not yet very clear. But the genealogy of the Great Kivas is fairly clear, now that we have more perspective and data. When combined, these make a fairly coherent outline.

We would probably admit first off that the large pithouses (A and V) of the SU Site and of the Promontory Site (Pithouse B) (about A.D. 1 or before) were kivas and large ones at that. In fact, Smiley (1952, p. 22) is of the opinion that the Great Kiva was one of the outstanding architectural features of the early Mogollon peoples.

Now the connections between these early (Great?) kivas and like structures of the San Francisco and Three Circle Phases are obscure, but we do have some information at hand.

For kivas of the San Francisco Phase, we have pithouses H and K at Turkey Foot Ridge in our area. For other Mogollon areas, Wheat (1955, p. 57) lists five other large ceremonial structures that are assigned to this same phase.

For kivas of the Three Circle Phase, we have in the Pine Lawn area House Y at the SU Site and House C at Turkey Foot Ridge. Both of these houses were small but were provided with ventilators. We should note that House K, at Turkey Foot Ridge, was also utilized in this phase as a kiva. Then nearby, at Wheatley Ridge Site, there is a large rectangular structure with an easterly ramp entrance, and this we would class as a Great Kiva (Rowe, 1947). For adjacent Mogollon areas, Wheat (1955, p. 57) lists four others, three of which may be called Great Kivas.

Our excavations in sites of the Reserve Phase have not yielded any small kivas, but we have dug two Great Kivas (Chapter I; see also Bluhm, 1957), and we know of one other (Hough, 1907, p. 69).

For the Tularosa Phase we have the later, larger Great Kiva at Higgins Flat (for details see Chapter I). Several others have been reported but have not yet been excavated.

Looking over all the evidence at hand, we conjecture that we have a sequence of the growth of Great Kivas that may be outlined as follows:

Pine Lawn Phase. Example: House A, SU Site.

Georgetown Phase. Example: House 14, Harris Village (Haury, 1936a, p. 56).

San Francisco Phase. Example: House K, Turkey Foot Ridge.

Three Circle Phase. Examples: Wheatley Ridge (Rowe, 1947) and Cameron Creek (Bradfield, 1931, pl. 16).

Reserve Phase. Examples: Sawmill Site (Bluhm, 1957) and lower Great Kiva at Higgins Flat (this report, Chapter I).

Tularosa Phase. Example: Upper Great Kiva at Higgins Flat (this report, Chapter I).

Certainly, then, the Great Kiva is in the Mogollon Tradition.

When we consider the question of small kivas, we immediately encounter obstacles. First, what is a kiva? This question was briefly touched upon in Chapter I. A Great Kiva is less difficult to define because several features distinguish it from all other rooms at a given site.

The small, subterranean room at Higgins Flat seemed to combine features of both a dwelling room and a kiva, the kiva feature being the ventilator. But perhaps it was merely a pithouse.

But were Houses H of the San Francisco Phase and C of the Three Circle Phase at Turkey Foot Ridge (Martin and Rinaldo, 1950a) kivas? Was House Y, Three Circle Phase, at the SU Site (Martin and Rinaldo, 1947) a kiva? I don't know. They all had ventilators. Wheat (1955, p. 57) considers House Y (SU Site) a ceremonial structure, but does not mention the two at Turkey Foot Ridge.

The problem has become somewhat more difficult, paradoxical as that may seem, in the light of recent work.

During the winter (1954–55), it became evident that the Apache Creek Site would be completely obliterated by road construction. A salvage expedition was organized by the New Mexico State Highway Department, the U.S. Bureau of Public Roads, the Department of the Interior, and the Museum of New Mexico, and Dr. Fred Wendorf was put in charge of the salvage digging. Four sites were thus quickly examined, Apache Creek Site being one of them.

We have no information on three of the sites and only very meager data on our own Apache Creek Site. These data consist of outline drawings of seven pithouse kivas added to our map of the site.

These subterranean structures were filled with refuse and some of the wall stones had been removed. Wendorf thinks these structures were abandoned at the time the surface pueblo (Apache Creek) was built. The pottery types appear to be the same as those that we recovered from the pueblo, although we have not seen the sherds nor do we have the sherd counts. Wendorf is of the opinion that these buildings were pithouses and not kivas because he found in them mealing bins, manos, flour receptacles. They are all provided with ventilators and firepits.

We are of the opinion that these structures were used for domestic as well as ceremonial purposes. Dr. O'Bryan evidently had similar ideas when he excavated at Jewett Gap, for he called his subterranean structures "pit-kivas" (see Chapter IV).

This controversy cannot be resolved at present; but one facet of the problem that should be borne in mind is that pit structures did not die out at the end of the Three Circle Phase. The connection between the rectangular pithouses of the Three Circle Phase and the pit structures of the Tularosa Phase is not clear, for we have no link between them. In other words, we have not yet discovered any pithouse kivas that may be assigned to the Reserve Phase. They may exist and they may yet be found.

The pithouse kiva that we excavated at Higgins Flat was not filled with refuse, had certainly been used during the early life of the nearby pueblo, and may be assigned with certainty to the Tularosa Phase. I might add that we feel fairly certain that more rectangular subterranean structures exist at Higgins Flat, but we have not been able to dig them.

I cannot go beyond these remarks at the present time. Further digging may clarify some of these problems.

Before leaving this discussion on architecture and village patterns I should like to call attention to several surface rooms that were provided with ventilators. They are in Rooms A and E at Higgins Flat Pueblo (Martin, Rinaldo, *et al.*, 1956); Room 3, at Apache Creek Site; and Room 2 at Valley View Pueblo. All of these rooms may have served as living quar-

ters as well as kivas. If this is not so, we have no satisfactory explanation for the presence of the ventilators.

Turning now to the materials recovered, we shall briefly summarize the data obtained from artifacts of stone and bone and from the ceramics.

In Chapter II, Rinaldo has given a complete and masterly breakdown of the artifacts of stone and bone. From his detailed study of these objects, he draws several conclusions that I shall enumerate here.

1. The major categories of tool types are the same for the Tularosa Phase as for the earliest Mogollon times.

2. Many of the artifacts from the Tularosa Phase have counterparts in the earliest phases; and indeed, for some types of tools, it would be difficult to separate Tularosa Phase scrapers, choppers, flake knives, and others from those of the Pine Lawn Phase.

3. There are marked changes in some of the artifacts; for example, beveled manos, small triangular side-notched projectile points, grooved axes, and rectangular stone bowls are rare or absent from earlier phases and might be considered as diagnostic of later phases.

4. Tabular or two hand rectangular manos with flat grinding surface become more popular as through trough metates increase in frequency. Coupled with this change, one finds an accompanying decrease in mortars, pestles, and one hand manos and metates with trough open at one end only.

5. As grooved axes become more frequent, choppers tend to die out.

6. Replacement of the atlatl by the bow and arrow is responsible for an increase in use of the triangular, lateral-notched projectile point and a decrease in the use of the larger, diagonal-notched projectile points.

7. As polished, plain pottery types were replaced by textured types, polishing stones became less necessary and less frequent in occurrence.

All in all, Rinaldo found that the artifacts of the Tularosa Phase corroborated a trend that we have traced in Mogollon culture for about two thousand years and that the artifacts confirm all previous evidence of the continuity of Mogollon material culture.

The pottery recovered from our digging in 1954 is described in Chapter III by Mrs. Eloise Richards Barter. It yields the following information.

I. The pottery from the three sites reported upon (Great Kivas at Higgins Flat; surface rooms at Apache Creek Site; and surface rooms at Valley View Site) falls in the middle range of the Tularosa Phase. Therefore, Cosper Cliff-Dwelling and Higgins Flat Pueblo are the latest sites yet dug (Martin, Rinaldo, Bluhm, 1954; and Martin, Rinaldo, *et al.*, 1956). This hypothesis was established by means of seriation. No tree-ring dates exist for any of these sites.

II. We now have greater knowledge of the ceramics of the middle range of the Tularosa Phase.

III. We can now more firmly characterize the differences between Reserve Black-on-White and Tularosa Black-on-White types.

IV. The guide types for the Tularosa Phase in the Reserve area have been tentatively established as follows: Tularosa Black-on-White, Tularosa White-on-Red, occasionally St. Johns Polychrome, Tularosa Fillet Rim, and Tularosa Patterned Corrugated, an abundance of Reserve Indented Corrugated, and a diminishing amount of Plain Corrugated and Reserve Black-on-White.

V. Certain important ceramic trends have been noted: (1) Reserve Indented Corrugated increases in popularity as unindented types decrease, although towards the end of the phase as we now know it, this type, too, seems to fall off slightly; (2) at the same time, Tularosa Patterned Corrugated and Tularosa Fillet Rim increase slightly in frequency; (3) indenting may be an Anasazi technique introduced into the Reserve area, after A.D. 1000; (4) Red Neck Corrugated vessels increase slightly in popularity; (5) smudging on interiors of all plain and textured types increases; (6) corrugations tend to become finer (narrower); (7) experimentation decreases; (8) Mimbres Bold Face and Mimbres Classic remain in almost constant quantity through most of the Tularosa Phase; (9) a sprinkling of Reserve Black-on-White is found all through the Tularosa Phase; and (10) intermixture of Mogollon and Anasazi ceramic traditions is one of the chief characteristics of the Tularosa Phase.

Likewise included in this report is a full description by Mrs. Barter of the pottery from the Jewett Gap Site, dug in 1947–49 by Dr. Deric O'Bryan, then of Gila Pueblo staff (Chapter IV). These excavations were carried on under the auspices of Gila Pueblo, the director of which was Mr. Harold S. Gladwin. Since the time of the excavations, Gila Pueblo has been dissolved as a research institution after a magnificent record of nearly thirty years. Mr. Gladwin generously presented the buildings, grounds, furnishings, collections, and all notes and catalogues to the Department of Anthropology of the University of Arizona. The collection, including thousands of documented whole pots and classified sherds, is the largest and finest Southwestern collection in the world.

With the permission of Mr. Gladwin, Dr. O'Bryan, and Dr. E. W. Haury, Chairman of the Department of Anthropology, University of Arizona, we have included this complete record of the pottery from the Jewett Gap Site. We did this because the site is only about thirty miles north of the sites we have been digging the past two seasons. Thus, the analysis of the pottery from our digs plus that from Jewett Gap greatly enlarges our information on the ceramics of Tularosa Phase sites.

The pottery from Jewett Gap consists of a collection of 265 whole or restorable vessels from rooms and burials. An analysis of such a collection renders a slightly clearer picture than when one is working entirely from sherds and a few whole vessels. For comparative purposes, Mrs. Barter compared her painted vessels with a collection of 350 Tularosa Black-on-White vessels that were purchased in the Springerville area from collectors by this Museum about fifty years ago.

From this comparative and comprehensive study, Mrs. Barter has drawn some interesting conclusions. I shall cull a few of these for use in this summary.

1. All the types at Jewett Gap, both unpainted and painted, are the same as those found in and described for the Reserve area.

2. In general, the painted pottery under discussion is the same. There are differences, however, in the most popular shapes and design elements. For example, there are more bowl forms proportionately from Jewett Gap and Higgins Flat Pueblo sites than are found in the purchased collection; and there are more jars proportionately in the Jewett Gap collection than there are in our purchased collection. Then again, the design element known as "opposed solid terraces" is several times more popular, proportionately, in the Jewett Gap pottery than in our purchased collection and about twice as popular as in our excavated sherds of 1954.

The meaning of these variations is not clear. They may be due to chronological differences; that is, the Jewett Gap pottery may be a few years earlier than the purchased collection; or they may simply be due to regional preferences.

3. A functional classification of the pottery (as based on presence or absence of soot) indicates that three types were most frequently used for cooking: Reserve Indented Corrugated jars, Reserve Smudged bowls, and Reserve Plain Corrugated jars.

4. Types that were probably used mostly for storage or serving of food are Tularosa Fillet Rim bowls, Reserve Plain Corrugated bowls, and Reserve Indented Corrugated bowls.

5. The number of vessels interred with an individual apparently did not depend on age or sex. One vessel was included in 77 per cent of the burials. No special mortuary pottery was found.

6. The pottery included with adolescent and infant burials tends to be of poorer quality.

7. Miniature vessels were often included with burials of children and infants.

8. Eccentric shapes (duck effigies, ring vessels, and quadrilobate jars) seem to have been associated with skeletons of children or females. It may be that these special shapes were the exclusive property of the female line

and may be linked with the matrilineal organization that we have postulated (Martin and Rinaldo, 1950b).

9. The conjectural date for the latest occupation of the Jewett Gap Site is A.D. 1100–1125. These dates are just slightly earlier than the guess dates for Apache Creek Pueblo (A.D. 1150–1200) and Valley View Pueblo (A.D. 1175), and are about one hundred years earlier than the postulated date for the abandonment of Higgins Flat Pueblo (A.D. 1250).

All of these dates are the result of juggling and guessing. Most of my colleagues tentatively fix the Tularosa Phase of the Reserve area as falling some time between A.D. 1100 and 1250. My personal feeling is that these dates are too early and I tend to place my bets on a span that would fall between A.D. 1200 and 1350. But this is based on a hunch—nothing more—and brings forth no concurrence from my co-workers.

I remarked earlier that we now have a better idea as to what constitutes "lateness" in prehistoric villages of the Reserve–Alpine–Blue River region. I shall briefly enumerate the traits that we think may be found in the latest occupation of our area.

1. A pueblo consisting of a fairly large conglomeration of rooms (50–100), two to three stories in height, arranged in quadrilateral fashion around a plaza; that is, rows of rooms on three sides of a rectangle with a wall on the fourth side; or rows of rooms on the four sides of a rectangular ground plan.

2. Kiva pithouses within the plaza and perhaps outside the enclosure also.

3. The pueblo located possibly on high ground or a defendable mesa and near a spring or other good water supply.

4. Masonry of fairly high order.

5. The following major pottery types: Reserve Indented Corrugated, Tularosa Variety; Tularosa Patterned Corrugated; Tularosa Fillet Rim, a kind of black-on-red; Tularosa White-on-Red; Springerville Polychrome; Tularosa Black-on-White; a sprinkling of Reserve Black-on-White; Pinedale Polychrome; and perhaps some other fourteenth century trade sherds.

6. The following major categories of tools of stone: through trough metates, often concave; rectangular manos; stone hoes; full and three quarter groove axes and mauls; rectangular and or painted vessels; small triangular arrow points; abundant shell, some of which would be carved; stone (and clay) animal figures; painted slabs; large pipes.

All of this is hypothetical; but we shall endeavor to test our guess before we leave the Reserve area.

On the basis of present evidence it appears that Anasazi people from Zuñi-way moved into the Reserve area as early as A.D. 1000. They may

have been invited or they may have migrated into the area because of population pressures and movements that may have taken place at about that time.

In a detailed report on the pottery of the Reserve area, now in preparation, Bluhm has examined from many points of view the question of Anasazi immigration and influence. I do not care to anticipate her conclusions or conjectures, but I may safely say from the evidence yielded by the excavations, as well as from all other evidence, that if immigration of Anasazi people occurred, their coexistence with the Mogollon residents was completely peaceful. They lived cheek by jowl in the same villages and swapped ideas back and forth. Out of this intermixture grew a well integrated, though short-lived, cultural development. In fact, it is an excellent example of acculturation. I wish we knew more about the mechanics of this blending, but the reading of the dim record is difficult.

And then what happened to the people who had worked out an admirable way of life, well suited to their requirements and ecology? We do not know. Our guess is that they moved northward and westward and that some of them eventually wound up in Zuñi land. In fact, they may be responsible for the introduction of rectangular kivas in the Zuñi area.

And what caused the exodus? To this, likewise, we have no answer.

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Index

Publication 823